

1992-1993
GRADUATE
CATALOG



University of Central Florida

DEGREES OFFERED

COLLEGE OF ARTS AND SCIENCES

Master of Arts

Communication
English
Creative Writing
Literature
History
Political Science
Sociology, Applied

Master of Science

Biology
Chemistry, Industrial
Computer Science
Mathematical Science
Physics
Psychology
Clinical
Industrial/Organizational
Statistical Computing

Doctor of Philosophy

Computer Science
Physics
Psychology
Human Factors

COLLEGE OF BUSINESS ADMINISTRATION

Master of Arts in Applied Economics (M.A.A.E.)

Master of Business Administration (M.B.A.)

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

Doctor of Philosophy Business Administration

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

COLLEGE OF EDUCATION

Master of Arts and/or Master of Education

Art Education
Business Education
Counselor Education
Educational Leadership
Educational Media
Elementary Education
English Language Arts
Exceptional Child

Instructional Systems
Mathematics Education
Music Education
Physical Education
Reading Education
Science Education
Social Science Education
Vocational Education

Educational Specialist Curriculum and Instruction Educational Leadership School Psychology

Doctor of Education Curriculum and Instruction Educational Leadership

COLLEGE OF ENGINEERING

Master of Science (M.S.)

Aerospace Systems
Communications
Computer Engineering
Computer Integrated
Manufacturing
Computer Systems
Construction Engineering
Controls
Digital Signal Processing
Electrical Systems
& Sciences
Electromagnetics
Electronics
Electro-Optics
Engineering Management
Engineering System Analysis

Environmental Sciences
Geotechnical Engineering
Industrial Engineering
Manufacturing Engineering
Materials Science & Engineering
Mechanical Systems
Microelectronics
Operations Research
Product Assurance
Engineering
Simulation Systems
Structural Engineering
Structures & Foundations
Thermo-Fluids
Transportation Engineering
Water Resources Engineering

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

Civil Engineering
Computer Engineering
Electrical Engineering
Environmental Engineering
Industrial Engineering
Manufacturing Engineering
Mechanical Engineering

Doctor of Philosophy

Civil Engineering
Computer Engineering
Electrical Engineering
Environmental Engineering
Industrial Engineering
Mechanical Engineering

COLLEGE OF HEALTH AND PUBLIC AFFAIRS

Master of Arts

Communicative Disorders

Master of Science

Health Sciences
Molecular Biology &
Microbiology

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

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

GRADUATE CATALOG

UNIVERSITY OF CENTRAL FLORIDA
Orlando—Brevard—Daytona Beach—South Orlando

A Member Institution
of the
State University System of Florida



PEGASUS was the winged horse of the muses in Greek Mythology. He carried their hopes, their aspirations, and their poetry into the skies. PEGASUS is as futuristic as tomorrow's space exploration in our solar system and into the universe beyond. The seal also bridges the gap between the humanities and space technology.

Accent on the Individual
Accent on Excellence

Correspondence:

Graduate Admissions - AD144
University of Central Florida
P O Box 160112
Orlando, FL 32816-0112

Phone:

Graduate Admissions
(407) 823-2766
Housing
(407) 823-4663

Policy Statement

The University of Central Florida, under applicable rules of the Administrative Procedures Act, may change any of the announcements, information, policies, rules, regulations, or procedures set forth in this catalog. The catalog is published once a year and cannot always reflect new and modified regulations. Statements in this catalog may not be regarded in the nature of binding obligations on the institution or the State of Florida. While every effort will be made to accommodate the curricular needs of students, limited resources may prevent the University from offering all required courses in each semester or in day and evening sections.

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

The University of Central Florida values diversity in the campus community. Accordingly, discrimination on the basis of race, sex, national origin, religion, age, handicap, 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 environment.

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

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

Drug-Free Workplace/Drug-Free Schools Policy Statement

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

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Recent program changes may not be reflected in this catalog. Students should check with the appropriate graduate program coordinator for current information. Rules, policies, fees, and courses described in the catalog are subject to change without notice. Reader comments and suggestions for improving the usefulness of this catalog may be sent to: Graduate Catalog, Office of Undergraduate Studies, AD 210/213, UCF, PO Box 160125 Orlando, FL 32816-0125.

GRADUATE PROGRAM CALENDAR

SUMMER TERMS 1992

Term "C" 1992	Term "A" 1992	Term "B" 1992
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APPLICATION DEADLINES

For International Students	Nov. 16	Nov. 16	Nov. 16
For U.S. Post-baccalaureate Students	April 1	April 1	May 15
Readmission Applications	April 1	April 1	May 15

REGISTRATION by appointment*

Classes begin	May 9-10	May 9-10	May 9-10
Last day for refund/fees due	May 13	May 13	June 26
Last day of late registration, Add/Drop	May 15	May 15	June 29
Only day to submit audit request	May 14-15	May 14-15	June 29
Last day to apply for graduation	May 18	May 18	June 30
Deadline for withdrawal	May 22	May 22	May 22
Last day to remove an "I"	June 26	June 5	July 17
End of classes and term; exams	July 10		
Grades Due	Aug. 7	June 24	Aug. 7
	Aug. 11	June 30	Aug. 11

GRADUATE STUDIES DEADLINES

Request for Dissertation Defense	June 26
Announcement of Dissertation Defense	(One week prior to defense)
Dissertation Defense Deadline	July 17
Announcement of Thesis/Research Report	
Defense	(One week prior to defense)
Thesis Defense Deadline	July 24
Final thesis/dissertation/research report to College Dean	Aug. 5

GRE—General Test Dates

June 6, 1992

GMAT Test Dates

June 19, 1992

Registration deadline for tests is approximately five weeks before test; results are generally mailed about five weeks after the test date.

HOLIDAYS: Memorial Day — May 25, 1992 (University wide)

Independence Day — July 5, 1992 (University wide)

*Area campus students must contact the director of Brevard, Daytona Beach, or South Orlando campus. Deadlines for registration and Add/Drop may precede main campus dates and may vary with individual campuses.

JULY

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GRADUATE PROGRAM CALENDAR

FALL Semester 1992	SPRING Semester 1993	SUMMER Term "C" 1993
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Colleges may have earlier deadlines. See individual colleges for information

APPLICATION DEADLINES

For International Students	March 27	Aug. 31	Nov. 16
For U.S. Post-baccalaureate Students	July 17	Dec. 4	April 1
Readmission Applications	July 17	Dec. 4	April 1

REGISTRATION by appointment*	Aug. 18-21	Jan. 7-8	May 13-14
Classes begin	Aug. 24	Jan. 11	May 17
Last day of late registration, Add/Drop**	Aug. 25-28	Jan. 12-13	May 18-19
Last day for refund of fees	Aug. 28	Jan. 13	May 19
Only day to submit audit request	Aug. 31	Jan. 14	May 20
Last day to apply for graduation	Aug. 28	Jan. 15	May 21
Deadline for withdrawal	Oct. 16	Feb. 26	June 25
Last day to remove an "I"	Nov. 13	April 2	July 9
Founders' Day Honors Convocation (Classes cancelled 10 a.m.-Noon)		April 7	
Classes end	Dec. 3	April 26	Aug. 6
Final exams and Special Exams	Dec. 5-11	Apr. 29-May 5	
End of Term and/or Commencement	Dec. 12	May 8	Aug. 7
Grades Due	Dec. 15	May 10	Aug. 9

**If class meets first time Wed. or Thurs. night, Add/Drop can be adjusted.

Colleges may have earlier deadlines. See individual colleges for information

GRADUATE STUDIES DEADLINES

Request for Dissertation Defense	Oct. 19	March 15	June 25
Announcement of Dissertation/Thesis/Research Report Defense: At least one week prior to Defense			
Dissertation Defense deadline	Nov. 13	April 2	July 9
Thesis Defense deadline	Nov. 20	April 9	July 16
Final thesis, dissertations or research reports to College Dean	Dec. 1	April 22	Aug. 4

GRE—General Test Dates (5 tests given during a year)	Oct. 10 & Dec. 12, 1992 Feb. 6, Apr. 17 & June 5, 1993
GMAT Test Dates (4 tests given during a year)	Oct. 17, 1992 Jan. 16, Mar. 20 & June 19, 1993

HOLIDAYS: Labor Day — September 7, 1992 (University wide)
Homecoming — 7 p.m. November 7, 1992
Veterans Day — November 11, 1992 (University wide)
Thanksgiving Holidays — November 26-28, 1992 (University wide)
Martin Luther King Day — January 18, 1993 (University wide)
Spring Holidays — March 8-13, 1993
Memorial Day — May 31, 1993 (University wide)
Independence Day — July 5, 1993 (University wide)

*Area campus students must contact the director of Brevard, Daytona Beach or South Orlando campus. Deadlines for registration and Add/Drop may precede main campus dates and may vary with individual campuses.

JANUARY

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JULY

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ADMINISTRATION AND STAFF

STATE OF FLORIDA BOARD OF EDUCATION

Lawton Chiles	Governor
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Bob Butterworth	Attorney General
Tom Gallagher	State Treasurer
Jim Smith	Secretary of State
Gerald Lewis	Comptroller
Bob Crawford	Commissioner of Agriculture

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Thomas F. Petway III	Jacksonville
Carolyn King Roberts	Ocala
Charles B. Reed, Chancellor	Tallahassee

UNIVERSITY OF CENTRAL FLORIDA ADMINISTRATION

President of the University	John C. Hitt
Provost and Vice President for Academic Affairs	Richard Astro
Associate Vice President for Academic Affairs and Coordinator for Graduate Programs	Frank E. Juge
Vice President for Administration and Finance	John R. Bolte
Vice President for Research	Michael Bass
Vice President for Student Affairs	LeVester Tubbs
Vice President for University Relations	D. Robert McGinnis

DIVISION OF SPONSORED RESEARCH

Vice President for Research	Michael Bass
Director of Research	Rusty Okoniewski
Center for Research in Electro-Optics & Lasers	M.J. Soileau
Florida Solar Energy Center	David L. Block
Institute for Simulation and Training	A. Louis Medin

CENTRAL FLORIDA RESEARCH PARK

Director	Joseph H. Wallace
Contracts and Grants Manager	Betsy L. Gray
Contract Management Coordinator	Irene P. Marton
Contract Management Coordinator	Douglas Backman
Grant Development Manager	Bruce Furino
Assistant in Grant Development	Julie Voorhees
Assistant in Grant Development	JoAnn Smith
Information System Coordinator	James E. Robertson
Information System Programmer	Carol Charbono
Fiscal Manager	Bill Roach
Associate in Fiscal Management	Janet Girard
Associate in Fiscal Management	Mark Stoneburner
Manager in MIS (Management Info. Sys.)	Denise Charleston

COLLEGES, GRADUATE PROGRAMS, AND DEPARTMENT CHAIRS

College of Arts and Sciences

Dean	Edward P. Sheridan
Associate Dean	Kathryn L. Seidel
Associate Dean	Ben B. Morgan, Jr.
Assistant Dean	Bruce A. Whisler
Assistant Dean	Diana Velez
Biology	David H. Vickers
Chemistry	D. Howard Miles
Communication	James W. Welke
Computer Science	Terry J. Frederick
English	John F. Schell
History	Richard C. Crepeau
Mathematics	Lokenath Debnath
Physics	Subir K. Bose
Political Science	Elliott M. Vittes
Psychology	Margaret H. Thomas
Sociology and Anthropology	David A. Fabianic
Statistics	Mark E. Johnson

College of Business Administration

Dean	Richard C. Huseman
Associate Dean	John D. Hatfield
Assistant Dean	Sharon S. Graham
Accounting	Thomas G. Evans
Economics	W. Warren McHone
Finance	Ronnie J. Clayton
Hospitality Management	Ady Milman
Management	Pamela S. Lewis
Marketing	Raymond P. Fisk

College of Education

Dean	TBA
Associate Dean	Mary Ann Lynn
Assistant Dean	Timothy Blair
Instructional Programs	Daniel Kirby
Educational Services	William C. Bozeman
Educational Foundations	J. Nannette McLain
Exceptional and Physical Education	Michael W. Churton

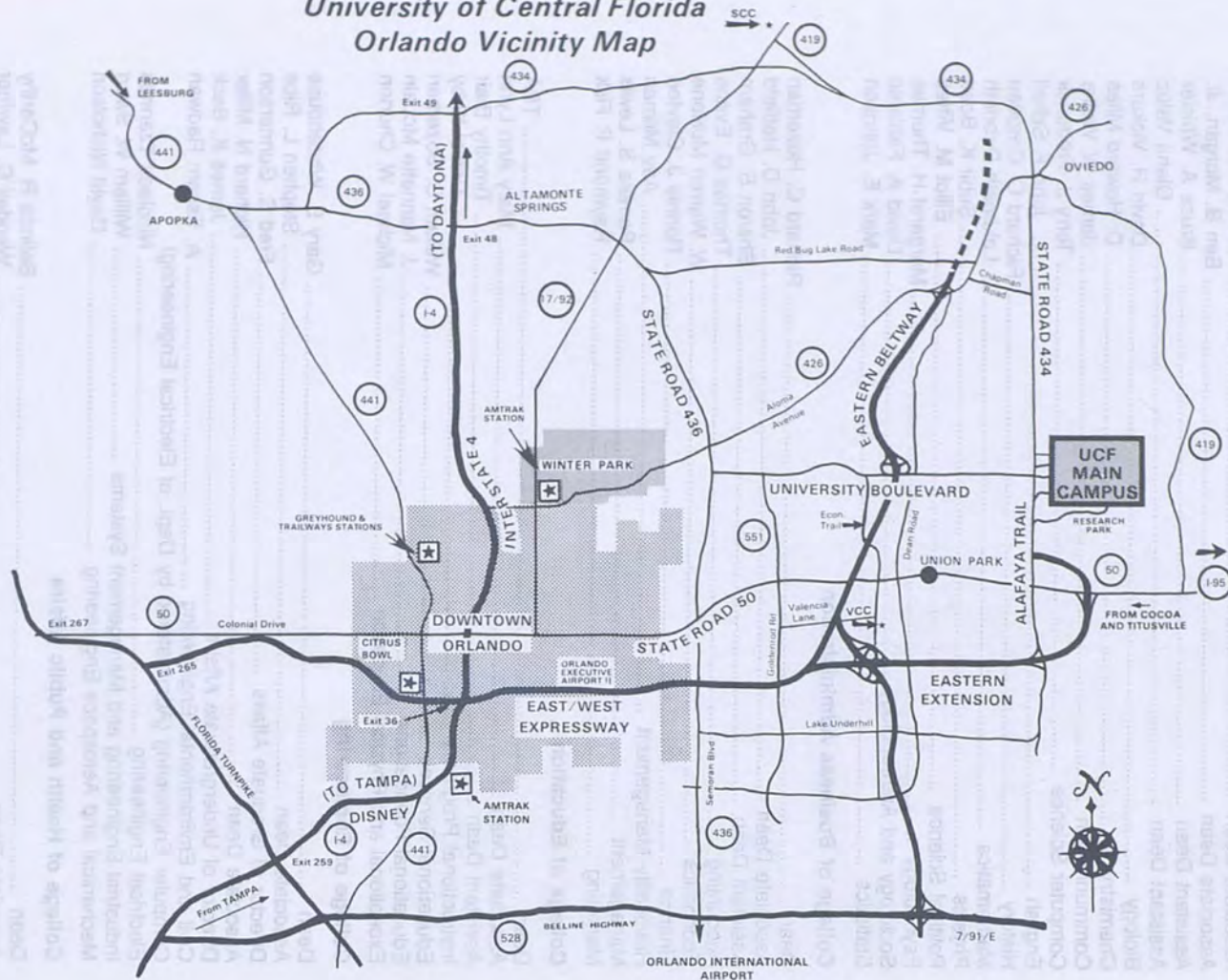
College of Engineering

Dean	Gary E. Whitehouse
Associate Dean	Stephen L. Rice
Director of Graduate Affairs	Fred S. Gunnerson
Associate Dean	Richard N. Miller
Director of Undergraduate Affairs	James K. Beck
Civil and Environmental Engineering	A. Essam Radwan
Computer Engineering (Administered by Dept. of Electrical Engineering)	
Electrical Engineering	Nicolaos Tzannes
Industrial Engineering and Management Systems	William W. Swart
Mechanical and Aerospace Engineering	David Nicholson

College of Health and Public Affairs

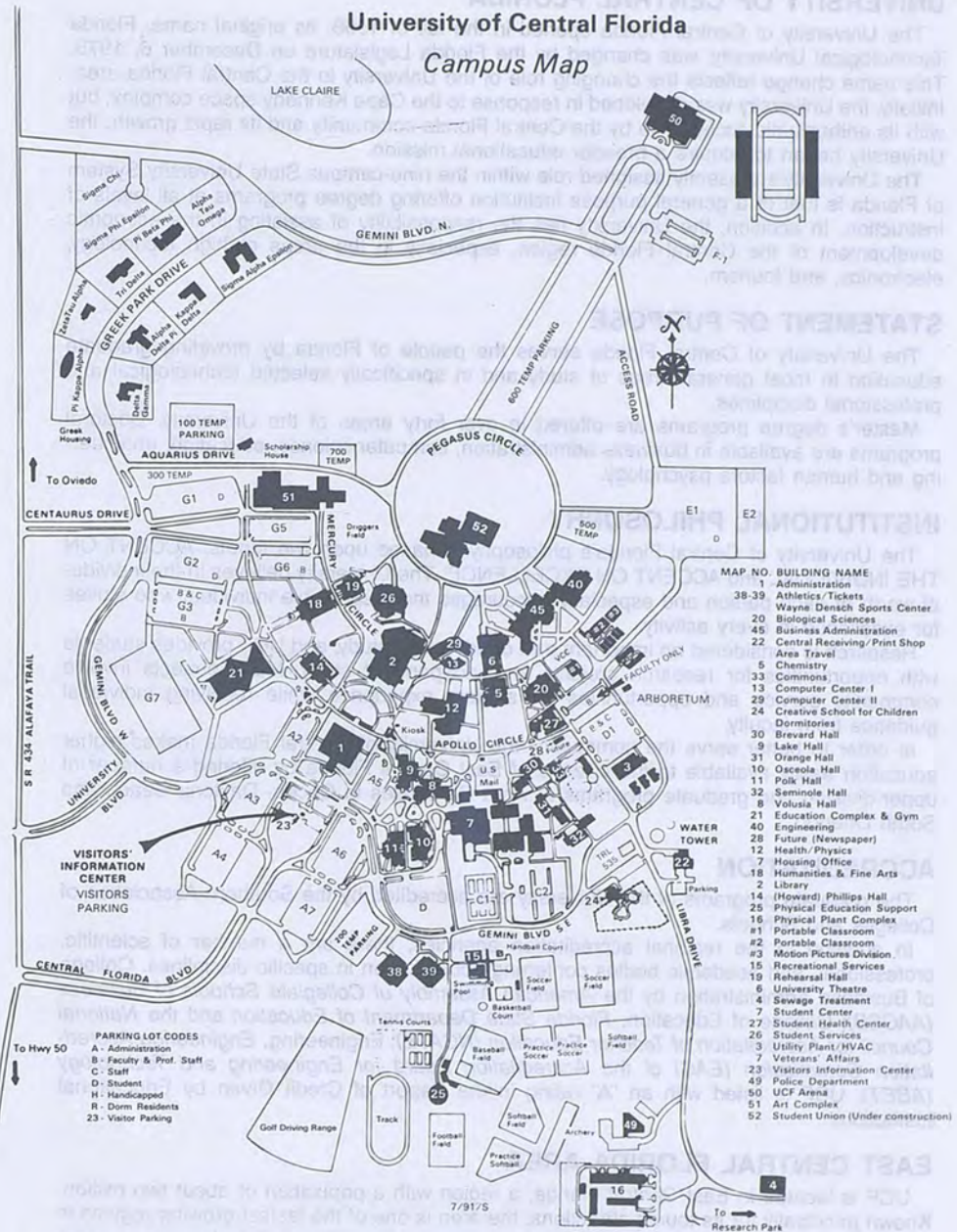
Dean	Belinda R. McCarthy
Associate Dean	Wendell C. Lawther
Associate Dean	Martha Jo Edwards
Communicative Disorders	TBA
Health Sciences	TBA
Molecular Biology and Microbiology	R.N. Gennaro
Public Administration	Robert B. Denhardt
Social Work	Kenneth Kazmerski

University of Central Florida Orlando Vicinity Map



University of Central Florida

Campus Map



THE UNIVERSITY

UNIVERSITY OF CENTRAL FLORIDA

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

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

STATEMENT OF PURPOSE

The University of Central Florida serves the people of Florida by providing graduate education in most general areas of study and in specifically selected technological and professional disciplines.

Master's degree programs are offered in over forty areas of the University. Doctoral programs are available in business administration, computer science, education, engineering and human factors psychology.

INSTITUTIONAL PHILOSOPHY

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

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

In order to better serve the community, the University of Central Florida makes higher education easily available to the citizens of East Central Florida by offering a number of upper-division and graduate programs at Area Campuses in Cocoa, Daytona Beach and South Orlando.

ACCREDITATION

The graduate programs of the University are accredited by the Southern Association of Colleges and Schools.

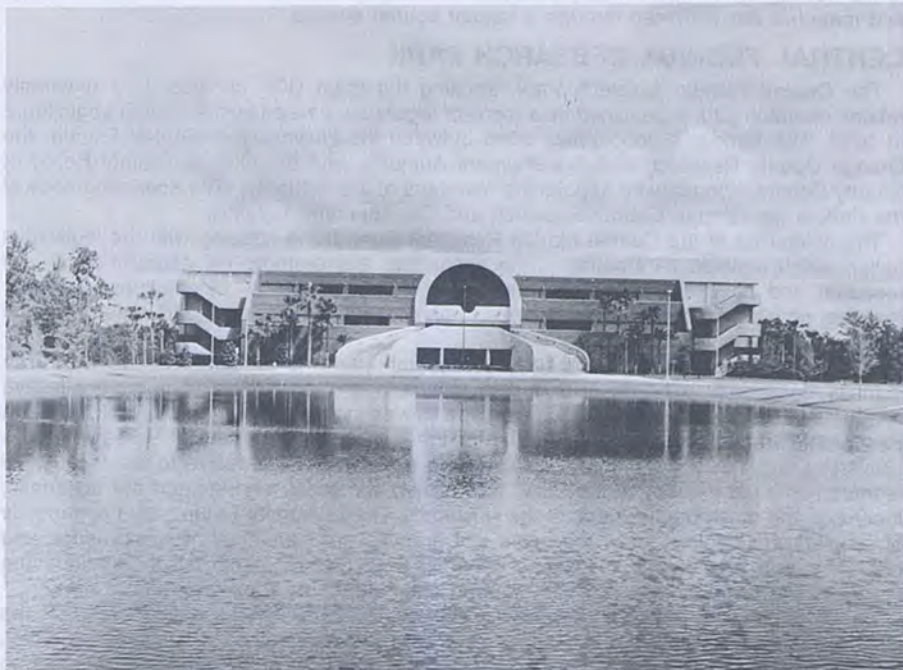
In addition to the regional accreditation agencies, there are a number of scientific, professional, and academic bodies conferring accreditation in specific disciplines. College of Business Administration by the *American Assembly of Collegiate Schools of Business (AACSB)*; College of Education, *Florida State Department of Education* and the *National Council for Accreditation of Teacher Education (NCATE)*; Engineering, *Engineering Accreditation Commission (EAC)* of the *Accreditation Board for Engineering and Technology (ABET)*. UCF is listed with an 'A' rating in the Report of Credit Given by Educational Institutions.

EAST CENTRAL FLORIDA AREA

UCF is located in East Central Florida, a region with a population of about two million. Known principally for its tourist attractions, 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 more vacationers here than anywhere else. The area also offers the Florida Symphony Orchestra, Broadway productions, pop and classical music headliners, art festivals, a Shakespeare festival of UCF origin, the National Basketball Association's Orlando Magic and restaurants of every type and price.

THE ORLANDO CAMPUS

The 1,227-acre campus is located in the Orlando suburbs, 13 miles northeast of downtown. Forty-nine permanent buildings—valued at more than \$100 million—radiate outwards from an academic core, where UCF's colleges, classrooms and library are located. More than \$90 million in new construction, including a 700-bed residence hall and \$11 million student union, is planned over the next three years. An \$8.6-million art complex is slated to open during the 1991-92 year, following the completion last year of a 6,500 seat field house. UCF recreational facilities include lighted tennis and raquetball courts, an outdoor swimming pool, golf driving range, volleyball and basketball courts and ball fields.



UNIVERSITY LIBRARIES

The University Library, housed in a facility of 200,000 square feet, has a collection of over 830,000 volumes with approximately 6,300 subscriptions (journals, newspapers, and other serials) and over 7,000 media titles. The Library is a partial depository for US and Florida documents, and US Patents. The Library online catalog, called LUIS, may be accessed through terminals in the Library, at other Campus locations, or from personal computers at home. Through LUIS, Library users can determine whether the UCF Library owns a particular item, and the location and availability of the item. In addition, LUIS also provides online access to catalogs of all state university libraries in Florida, and to ERIC and IAC Academic and Business Indexes.

The University Library is open approximately 95 hours each week, including evenings and weekends. A shortened schedule is maintained during vacation periods, and hours are extended during the last few weeks of each semester. A staff of professional librarians and paraprofessionals is available to assist and advise those using the Library. Arrangements may also be made for class or small group instruction. Faculty, staff, and students can obtain materials not available in the Library's collections through the Interlibrary Loan service. The Library can provide customized computer-produced bibliographies from any of approximately 500 different commercially available databases.

Special services are provided for the handicapped. By using a computer terminal,

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

Students enrolled in the University's extended campus centers in Daytona Beach and Brevard County receive a full range of services from the Daytona Beach Community College Library and the Brevard Community College Library. Students at the South Orlando Campus have access to a small reference collection and "electronic" library. Online access to the catalog of the main Library collection is available from all branch campus locations and materials are delivered through a regular courier service.

CENTRAL FLORIDA RESEARCH PARK

The Central Florida Research Park, abutting the main UCF campus, is a university related research park established as a result of legislation passed by the Florida Legislature in 1978. The Park is a cooperative effort between the University of Central Florida, the Orange County Research and Development Authority, and the Orange County Board of County Commissioners (who appoint the members of the Authority). The governing body of the Park is the Orange County Research and Development Authority.

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

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

Totally planned to provide a campus-like environment for business adjacent to UCF, the Central Florida Research Park consists of over 1,000 acres of land. Businesses which 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.

Four University organizations including the Institute for Simulation and Training and the Center for Research in Electro-Optics and Lasers (CREOL), are located in the Research Park. The U.S. Naval Training Systems Center (NTSC), the focal point of the nation's simulation and training industry, has its headquarters in the Research Park. Over 700 million dollars a year in federal contracts is granted by NTSC each year.

Currently over 70 companies are located in the Research Park pursuing activities in simulation and training, lasers, optical filters, behavioral sciences, diagnostic test equipment, and oceanographic equipment. Almost 4,000 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 the Northeast Data Center Amdahl 470 computer, with remote batch access and interactive processing through department and computer center equipment; a CDC 205 Supercomputer; IBM 3090s, 4341s and 4381s; a VAX-11/780 with peripheral devices; several microcomputers; and Tektronix graphics equipment. 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 the biological sciences, as are a greenhouse, an extensive herbarium, a vertebrate collection, complete animal facilities, and outstanding inland and coastal natural resources for fieldwork.

The engineering departments maintain modern, well-equipped laboratories and shop facilities. 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 a number of journals in a variety of disciplines.

The Canadian Review. Editor, Patrick Stewart

The Canadian Review is the publication of the Canadian Studies Programme of the University of Central Florida. It publishes articles, notes, teaching materials, and book reviews of interest to students and teachers of all areas of Canadian Studies.

Co-Ed Transactions. Co-editors, Dr. R. C. Harden and Dr. F. O. Simons, Jr.

A journal of the Computers in Education Division of ASEE. It publishes papers, application notes, and news items which are relevant to analog, hybrid and digital computation in education.

Florida Association of Science Teachers Journal. Co-editors, Dr. R. C. Bird and Dr. J. H. Armstrong

The *FAST Journal* is the official publication of the Florida Association of Science Teachers, Inc., the Florida chapter of the National Science Teachers Association. This journal is a peer-reviewed publication, published three times a year, and is devoted to the advancement of science education.

Florida Journal of Supervision and Curriculum Development, (FASCD) Newsletter. Editor, Dr. M. L. Kysilka

The *Florida Journal of Supervision and Curriculum Development* is the official publication of the Florida Association for Supervision and Curriculum Development. The journal is a refereed journal and is intended for all persons interested in curriculum, instruction, supervision and leadership in education. Issues are theme based and contain articles by leading educators, reports of programs and practices, interpretations and reports of research and book reviews. The *Florida Journal* is published three times a year.

Florida Media Quarterly. Editor, Dr. D. J. Toler

Florida Media Quarterly, the official publication of the Florida Association for Media in Education, disseminates current information about all aspects of instructional media, school library/media programs, and instructional technology to media professionals throughout Florida and the U.S. Current circulation is approximately 1500.

The Florida Reading Quarterly. Editor, Rosie Webb Joels

The Florida Reading Quarterly is a refereed journal published four times a year by the Florida Reading Association. It is for the members of the association and all others concerned with reading, especially as it is practiced and encouraged through instruction and supervision in schools. Articles regarding theories of reading, instructional practices, research studies, materials, interviews and critiques are typical contents of the journal.

The Florida Review. Edited by Russell Kesler

The Florida Review is a biannual literary magazine produced at UCF with editorial offices in the Department of English. *The Review* showcases outstanding poetry, fiction, and criticism by both Florida writers and out-of-state writers. Ongoing features include the annual printing of the winning poems from UCF's Florida Poetry Contest, and, in each issue's Floridianna section, a bibliography of works by Florida writers. The only editorial standard is literary excellence.

Global Perspectives is the official journal of the Transnational Studies Association and is the first nonpartisan, interdisciplinary, refereed journal of international relations devoted to the publication of research by graduate students and senior undergraduates worldwide. The journal's purpose is to provide a forum for responsible, objective expression of ideas through student research in all international aspects of politics, economics, business and marketing, security, law, organization, history, development, theory and methodology, culture and language studies, education and area studies. In addition to student research, the journal contains an editor's forum, letters to the editor, a guest essay by a prominent scholar, a commentary-article by an established scholar, special notices concerning international studies, book reviews, and occasional interviews with scholars or practitioners in the field.

Hospitality Education and Research Journal. Edited by Dr. Abraham Pizam

Hospitality Education and Research Journal is an interdisciplinary journal dedicated to advancing the understanding of Hospitality education and Hospitality research through empirical investigation and theoretical developments and innovative methodologies. *Hospitality Education and Research* is directed to those concerned with the functioning of hospitality enterprises, practitioners and academics alike. It is intended to be a medium for the transmission of ideas, information and views of educators, researchers and practitioners in the hospitality industry.

Ideas in Education. Edited by Dr. Patricia C. Manning

The College of Education sponsors a refereed journal, *Ideas in Education*, which is an annual publication to provide a forum for exchanging, exploring, and researching contemporary issues in education. *Ideas in Education* is received by over 200 universities and libraries in the United States and throughout the world.

International Journal of Mathematics and Mathematical Sciences. Dr. Lokenath Debnath, Chair and Professor of Mathematics, Managing Editor of the Journal

The Mathematics Department sponsors publication of the *International Journal of Mathematics and Mathematical Sciences*. This is a quarterly refereed journal primarily devoted to publication of research in all fields of mathematical and physical sciences, as well as related fields in which mathematical treatment is significantly involved. Through editorial activities, this office provides scholarly services to the international scientific community, promotes higher study and research, and disseminates knowledge in mathematical and physical sciences while cooperating with educational and research institution and organizations for the advancement of sciences and resources. In cooperation with a distinguished international editorial board, original research papers, research notes, research-expository and survey articles are processed, edited and then published.

The Journal of Reading Education. Dr. Richard A. Thompson, Editor

The Journal of Reading Education is a refereed journal of the Organization of Teacher Educators in Reading, an international association of reading professors associated with the International Reading Association. Its content features theories of reading, research into the reading process, strategies for workshops and instructional delivery to preservice and inservice teachers. Subscribers are primarily reading professors and reading program administrators.

Journal of Research on Computing in Education. Co-editors, Dr. William C. Bozeman and Dr. Dennis W. Spuck (University of Houston).

The *Journal of Research on Computing in Education* is an official publication of the International Society for Technology in Education (ISTE). Published quarterly, the journal presents refereed articles on original research, system or project descriptions and evaluations, assessments of the state of the art, and theoretical or conceptual positions that relate to the field of educational technology.

Journal of the Institute of Industrial Engineers. Dr. Gary E. Whitehouse, Editor, Mini/Micro Column

The editorial thrust of the *Journal of the Institute of Industrial Engineers* is directed to new

developments and approaches, and new products and services for the purpose of greater productivity and efficiency and more cost effective management. *Industrial Engineering* is published monthly with applications for executives, general managers, engineers, educators, and students.

Public Administration in the 1980s. Dr. Peter W. Colby, General Editor

Public Administration in the 1980s is a series of books and monographs published by the State University of New York Press dealing with critical issues in public administration which face our nation during the decade of the 1980s. Cross-national studies, genuinely comparative work concerning national, state, and local public administration in the United States, and case studies which clearly are generalizable or which deal with issues of major significance are included. Manuscripts are reviewed by both peers and SUNY Press staff.

Social Studies Teacher. International Editor, Dr. Wentworth Clarke; Editorial Consultant, Dr. Fred Green

The *Social Studies Teacher* is a refereed professional journal published nationally and internationally by a consortium of state social studies councils affiliated with the National Council for the Social Studies. It features the activities and research of social studies professionals from throughout the United States, Canada, Great Britain, Western Europe, Japan and Australia, acting as a clearinghouse for ideas related to improving social studies substance and instruction.

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

The *Tourism Barometer* is a quarterly publication which contains updated tourism forecasts based on the latest state-of-the-art tourism forecasting models. Its purpose is to assist Florida's tourism industry to more effectively gauge seasonal and long-term employment needs, program advertising and promotional expenditures, establish policies for the purchasing of supplies, plan capital outlays for new facilities and expansion, manage inventories, and project tax revenues from tourism activities.

UNIVERSITY OF CENTRAL FLORIDA FOUNDATION, INC.

The UCF Foundation, Inc. is a non-profit, tax-exempt corporation directed 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.

TRAVELING SCHOLAR PROGRAM

The University participates in the Board of Regent's Traveling Scholar Program (6C-6.07) enabling a graduate student to take advantage of special resources available on another campus but not available on his own 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 and the application fee 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 own graduate advisor, who will initiate a visiting arrangement with the appropriate faculty member of the host institution. After agreement by the student's advisor and the faculty member at the host institution, graduate deans at both institutions will be fully informed by the advisor and have the authority to approve or disapprove the academic arrangement. A student will register at the host institution and will pay tuition and/or registration fees according to fee schedules established at that institution.

Each university retains its full right to accept or reject any student who wishes to study under its auspices. A traveling scholar will normally be limited to one term on the campus of the host institution. (6-hour restriction).

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

The Traveling Scholar form, reproduced as the UCF GS-8, must be used for documentation. This form must be completed and prior approval obtained before any course work can be taken.

QUILL

The Quill is a select club on the UCF campus which 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

The Scroll is a select club on the UCF campus which was organized in 1987 to recognize and honor faculty of the University who have shown sustained research activities.

Criteria of eligibility based upon 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.

MINORITY STUDENT SERVICES

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

UNIVERSITY BOOKSTORE

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

UCF AREA CAMPUSES

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

UCF BREVARD CAMPUS

1519 Clearlake Road
Cocoa, Florida 32922
(407) 632-4127

UCF DAYTONA BEACH CAMPUS

1200 Volusia Avenue
PO Box 2811
Daytona Beach, FL 32120-2811
(904) 255-7423

UCF SOUTH ORLANDO CAMPUS

7300 Lake Ellenor Drive
Orlando, Florida 32809
(407) 855-0881

INSTITUTES AND CENTERS FOR RESEARCH

AIDS Education Information and Research Institute

The AIDS Education Information and Research Institute is an interdisciplinary organization established in the College of Health and Public Affairs to facilitate the promotion of AIDS information and to serve as a principal coordinator in cooperation with local, regional, and state organizations, for AIDS education and other issues of particular interest to Central Florida.

Major goals of the Institute are to promote and provide educational research, and service programs for professionals, the general public, and private organizations; to serve as a regional information and educational center, to aid the educational community in promoting, securing, and maintaining up-to-date literature concerned with AIDS.

Contact Person: Sharon E. Douglass, Director, HPB 350, (407) 823-AIDS

Center for Research in Electro-Optics and Lasers (CREOL)

CREOL was established in 1986 for the purpose of bringing together diverse disciplines into a cohesive optics and laser research and education program. The program was initiated by a \$2 million grant from the Florida legislature to support 21 additional faculty lines in optics and lasers as well as seven support positions.

Faculty members span the disciplines of electrical engineering, physics, computer engineering, mechanical engineering, mathematics, and related fields. CREOL: conducts research in such fields as laser propagation; laser/materials interaction, nonlinear optics; fiber optics; optical processing; laser development; detector technology; ultrafast phenomena; stimulated scattering; nonlinear optical spectroscopy; diffractive optics; thin-film optics; growth of nonlinear and laser host materials; superconductivity; and other areas. The center also participates in the industrial affiliates program, providing access to expertise and facilities to corporate members that contribute to its program.

CREOL operates 51 laboratories equipped with a full range of lasers, including YAG, pulsed-ruby, argon, krypton, CO₂, HeNe, nitrogen pumped-dye; spectrometers; spectrophotometer with computer data station; laser doppler velocimeters; hotwire anemometer and temperature and velocity measurement systems; optics tables; microscopy; photographic equipment and darkroom; large aperture collimator, phase screen, and peripherals; ion-plating thin-film deposition system; and a frequency conversion WEX system. Laboratories include the following:

Femtosecond Lab	High-Rep-Rate Picosecond YAG Laboratory
Nanosecond YAG Laboratory	Picosecond YAG Laboratory
Analysis Laboratory	Electro-Optics Laboratory
Optics Laboratory	Experimental Mechanics Laboratory
Turbulence Laboratory	Solid State Laser Laboratory
Propagation Laboratory	Thin-Film Laboratory
Crystal Growth Laboratory	Free-Electron Laser Laboratory
Metal-Vapor Laboratory	Laser Spectroscopy Laboratory
Single Mode and Picosecond CO ₂ Laser Laboratory	Laser Plasma Laboratory
	Diode-Pumped Laser Laboratory

CREOL has established a three-tiered industrial affiliates program for members, sustaining members, and senior members. Benefits depend upon the level of funding, but include direct access to CREOL research results, laboratories and equipment, opportunities to influence future CREOL directions through membership on advisory boards, assistance in recruiting graduates of CREOL-related programs, and advance access to nonproprietary research results. For information contact CREOL, 12424 Research Parkway, Suite 400, Orlando, FL 32826;

Contact Person: Dr. M. J. Soileau, Director Phone (407) 658-6800

Institute For Simulation and Training (IST)

IST was formed in 1982 in response to the need for a university affiliated institute to serve as a focal point for the emerging simulation and training community. IST serves as a link among academia, government and industrial organizations and provides a broad range

of research and academic services. Research that advances the state-of-art in affordable, effective simulation and training systems is conducted and sponsored by the Institute.

The talents of an interdisciplinary pool of researchers with expertise in computer science, human factors, psychology, visual systems, instructional technology and other specialties are utilized to work in key technologies that are the basis of simulation and training research. These technologies include: simulator networking, visual simulation, training systems effectiveness, artificial intelligence/expert systems, team training, computer architectures, user interface design, modeling/simulation programming, cognitive/information processing, database design and development, and instructional systems design.

Currently, six laboratories occupying over 8,400 square feet in Central Florida Research Pavilion are operated by IST. These facilities include:

Networking communications laboratory

Classroom education laboratory

Visual systems laboratory

Team training laboratory

Low cost flight trainer laboratory

Mathematics simulation laboratory

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

Resources for the IST's operation are provided by the Naval Training Systems Center, the Army's PM TRADE, the DOD's Training and Performance Data Center, the Central Florida Research Park, and the many new technology firms moving into the Orlando area. The IST has been named a Center of Excellence by the DOD and designated by the Florida legislature as the leading state agency for simulation services and research.

Contact Person: Dr. A. Louis Medin, Director, Phone (407) 658-5000; FAX (407) 658-5059

Space Education and Research Center

The Space Education and Research Center (SERC) is an interdisciplinary organization that relies on faculty participation from all five colleges of the University. SERC's mission is to:

- Perform research to advance space technology
- Provide researchers with greater access to the upper atmosphere and space
- Help commercialize space services
- Positively affect educational opportunities and experiences
- Upgrade capability through training and development programs
- Become an active participant in the international space community.

Research areas of interest include advanced launch systems, communications, the earth system sciences, educational technology, and space optics. The goal is to maximize space research opportunities for UCF faculty and students, while providing highly valued results to the space community.

In education, SERC serves as a catalyst for the development of new space related courses and programs. SERC also works with industry, government and the Central Florida school districts to improve science and mathematics education through the use of space applications and technology.

Contact Person: Jerry Ventre, Acting Director, 12424 Research Parkway, Suite 157, Orlando, FL 32826, Phone (407) 658-5599, FAX (407) 658-5595.

Center for Applied Human Factors in Aviation

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 joint endeavor between UCF and Charter partner Embry-Riddle Aeronautical University, Daytona Beach, Florida. Pooling the complimentary strengths of the two universities creates a research resource that is without peer for solving a vast assortment of aeronautical human factors problems. CAHFA research initiatives are aimed at significantly reducing human factors related accidents and incidents by determining the efficacy of and by developing strategies for achieving improvements in human performance in three general areas:

airspace system automation, aviation risk management, and team performance for flight crews and air traffic control personnel.

Contact Person: Dr. Richard Gilson, Director, Phone (407) 823-1011

Florida Solar Energy Center (FSEC)

The Florida legislature created the FSEC in 1974 to conduct research on alternative energy technologies, to improve the quality of available solar energy equipment, and to educate the public about energy options. Located on a 16-acre complex at Cape Canaveral, the center serves as a statewide institute administered by the University of Central Florida.

The FSEC conducts state, federal, and privately supported research in photovoltaics, energy use in buildings, electrical and uses, solar water heating, power electronics, innovative air conditioning systems, and the production and use of hydrogen. In addition, the center has developed and administers state-mandated programs that require the testing, certification, and approval of all solar energy equipment manufactured or sold in Florida. Through its public information office, FSEC responds to more than 15,000 requests for energy information each year. The center also conducts seminars and workshops for teachers and professionals statewide, and its technical library boasts one of the nation's most extensive holdings on solar and alternative energy. Current projects involve solar thermal systems, electric utilities research, hydrogen and energy systems, among others. For information contact the Florida Solar Energy Center, 300 State Road 401, Cape Canaveral, FL 32920-4099.

Contact Person: Dr. David Block, Director, Phone (407) 783-0300; FAX (407) 783-2571

Florida-Canada Institute

The Florida-Canada Institute is hosted by the University of Central Florida for the Florida Department of Education. The purpose of the Institute is to create and foster educational and commercial cultural and social exchanges between Canada and Florida. The Institute offers such programs as the Canadian Speakers Series and two Summer Seminars on Canadian Studies for school teachers. It provides opportunity for the state-wide dissemination of information about Canada to K-12 schools. Palm Beach Community College is the Florida State Division of Community Colleges co-host for the Florida-Canada Institute.

Contact Person: Dr. Henry Kennedy, Director, Phone (407) 823-2079

Florida-USSR Institute (name change pending)

The Florida-USSR Institute is hosted by the University of Central Florida for the Florida Department of Education. The purpose of the Institute is to create and foster educational and commercial cultural and social exchanges between USSR and Florida. The Institute plans to offer programs such as the USSR Speakers Series and exchange programs for teachers and scientists between the USSR and the State of Florida. It provides opportunity for the state-wide dissemination of information about USSR to K-12 schools.

Contact Person: Dr. Henry Kennedy, Director, Phone (407) 823-2079

Florida Sinkhole Research Institute

The Florida Sinkhole Research Institute acts as a central clearinghouse for data and professional expertise on the sinkhole problem. The Institute provides a public service by aiding homeowners and local governments with information and advice, and also conducts extensive sinkhole related research.

Contact Person: Dr. Barry F. Beck, Director, Phone (407) 823-5644.

Small Business Development Center

The Small Business Development Center (SBDC) was established as part of a statewide program in cooperation with the U.S. Small Business Administration.

The resources of the SBDC are utilized to counsel and train small business clients and prospective owners in a variety of areas, including finance and accounting, marketing, production, engineering, and technical and paralegal problems.

Contact Person: Aloyse T. Polfer, Director, BA 309, Phone (407) 823-5554.

Center for Economic Education

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. Additionally, the Center conducts research in economic education.

Contact Person: Dr. Robert L. Pennington, Director, BA 325, Phone (407) 823-2870

Institute for Statistics

The Institute for 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.

Contact Person: Dr. Mark E. Johnson, Director, Phone (407) 823-2289.

Dick Pope, Sr. Institute for Tourism Studies

The Dick Pope Sr. Institute for Tourism Studies serves Florida tourism through research, promotion, public awareness programs, and education. The Institute conducts studies in domestic and international tourism, such as the decision-making process of the economic impact of tourism. It also conducts marketing research for theme parks, hotels and restaurants.

The educational needs of the tourism industry are met by offering credit and non-credit courses. A four-year baccalaureate program in hospitality management prepares students to work as managers in the hospitality and tourism industries. Non-credit, non-degree programs tailored to the needs of specific enterprises and professional associations of the tourism industry include short courses, seminars, workshops, conferences, in-service training programs, and executive development programs.

Contact Person: Dr. Ady Milman, Acting Director, Phone (407) 823-2982

Small Business Institute

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 program, the Small Business Administration does not only satisfy this need, but at the same time provides free professional help to small businessmen 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. The Small Business Institute program at the same time provides on the job experience and sound academic training for the student.

Contact Person: Dr. Ron Rubin, Director, Phone (407) 823-2682

Institute for Technical Documentation

The Institute for Technical Documentation offers a variety of services of 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.

Computer-assisted processing aids in translating foreign languages, word processing

and editing text, gathering reference material, and conducting information searches. 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.

Contact Person: Gloria W. Jaffe, Director, FA 450, (407) 823-2212.

International Center for Management and Executive Development

The International Center for Management and Executive Development of the College of Business Administration provides seminars, workshops, and conferences on business and management-related topics. The Center is designed to support an organization's needs relating to every aspect of business management. This support may be in the form of short, intensive seminars presented on site or on campus; special topic seminars prepared for particular needs; or specially scheduled workshops and seminars. Excellence in programming and individual attention are key objectives of the Center. Examples of seminars and workshops held include: Time Management, The Supervisor Manager, Management Skills for Women, CPA Review, and Tax and Accounting Conference.

Contact Person: Dr. Craig McAllaster, Associate Dean, Phone (407) 823-2446.

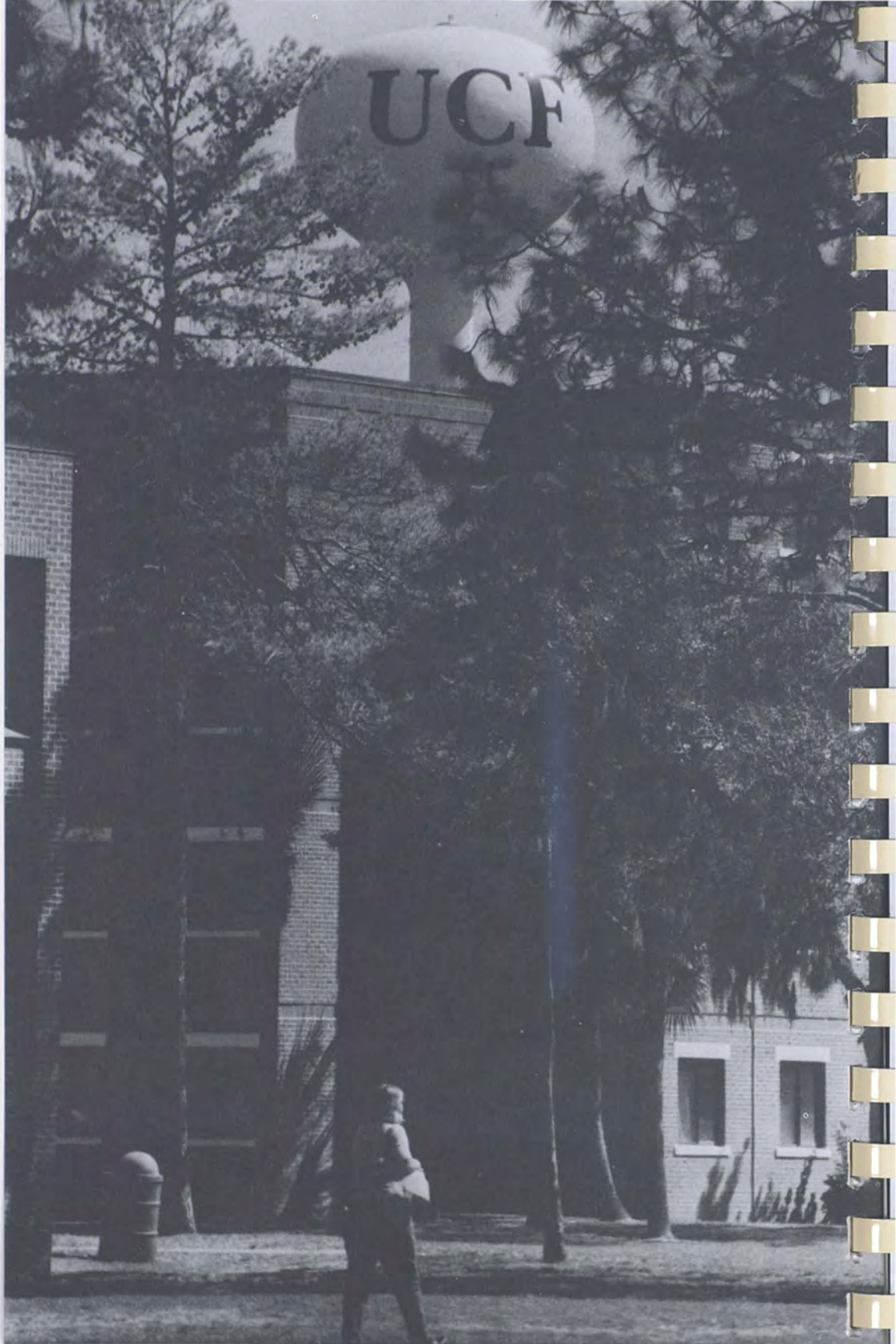
Oak Ridge Associated Universities (ORAU)

The University of Central Florida is a sponsoring institution of Oak Ridge Associated Universities (ORAU), a not-for-profit consortium of 62 colleges and universities and a management and operating contractor for the U.S. Department of Energy (DOE) with principal offices located in Oak Ridge, Tennessee. Founded in 1946, ORAU identifies and helps solve problems in science, engineering, technology, medicine, and human resources, and assists its member universities to focus their collective strengths in science and technology research on issues of national significance.

ORAU manages the Oak Ridge Institute for Science and Education (ORISE) for DOE. ORISE is responsible for national and international programs in science and engineering education, training and management systems, energy and environment systems, and medical sciences. ORISE's competitive programs bring students at all levels, precollege through postgraduate, and university faculty members into federal and private laboratories.

ORAU's office for University, Industry, and Government Alliances (UIGA) seeks out opportunities for collaborative alliances among its member universities, private industry, and federal laboratories. Current alliances include the Southern Association for High Energy Physics (SAHEP) and the Center for Bio-Electromagnetic Interaction Research (CBEIR). Other UIGA activities include the sponsorship of conferences and workshops, the Visiting Scholars program, and the Junior Faculty Enhancement Awards.

For additional information contact Dr. Michael Bass, Vice President for Research, AD 243, Phone (407) 823-3778.



ADMISSION TO THE UNIVERSITY AND GRADUATE PROGRAMS

Working with the Registrar, whose function is to process and insure completeness of records, the program coordinator and the dean of the college admit the prospective student to graduate study in the area for which he or she is applying. It should be noted that post-baccalaureate admission to UCF does not guarantee admission to graduate status in a degree program.

ADMISSION PROCEDURE AND DOCUMENTS

APPLICATIONS

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

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

ACCREDITATION

For the purposes of this catalog, "accredited institutions" means those institutions accredited by the six regional associations:

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

Foreign institutions are evaluated by UCF.

OFFICIAL TRANSCRIPTS

To be granted admission to UCF in either graduate or post-baccalaureate status, all applicants must have on file in the Registrar's Office official transcripts showing a baccalaureate degree and the grades for the last 60 semester hours of undergraduate work. If grades were transferred in from other schools in the last 60 semester (90 quarter) hours, official transcripts from those schools also must be sent. If applying to the Business 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 every student to take either the Graduate Record Exam (GRE) or the Graduate Management Admission Test (GMAT) before the student can be transferred from post-baccalaureate status to graduate student status. Some programs may also require the GRE subject test before admission into graduate student status. Official copies must be mailed from the Educational Testing Service to the Graduate Admissions Office 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 GRE is given five times a year and the GMAT is given four times a year on the UCF main campus.

An individual should contact the UCF Counseling and Testing Center for registration dates and procedures, at (407) 823-2811. Prep courses are offered through the College of Extended Studies at (407) 249-6100.

Educational Testing Service began a new policy, effective with the October 1985 GRE test, of reporting 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 and have an official score reported to UCF. However, the established time limit of acceptable official test scores varies with programs at UCF, as shown below:

Arts and Sciences

Biology	5-year limit
Chemistry, Industrial	No limit
Communication	No limit
Computer Science	No limit on General test, but a 2-year limit on the GRE Computer Science Subject Test.
English	No limit
History	No limit
Mathematical Sciences	5-year limit
Physics	No limit
Political Science	No limit
Psychology	5-year limit
Public Administration	5-year limit
Sociology, Applied	7-year limit
Statistical Computing	5-year limit

Business Administration programs have a 5-year limit on the GMAT score.

Education programs have no limit.

Engineering programs have no limit.

Health & Public Affairs

Communicative Disorders	7-year limit
Health Sciences	7-year limit

RECORDS DEADLINE - Supporting Documents

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

RECORDS - Validity of Documents

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

MEDICAL HISTORY REPORT

All new students must furnish medical history reports on the approved University health form before registration will be allowed. The Medical History Report will be mailed to the applicant upon receipt of the application for admission.

Immunizations and diagnostic procedures may be required of students by the University prior to any registration. University requirements for vaccinations or immunizations may be waived upon receipt of appropriate documentation from the student that the waiver is requested on the basis of religious grounds or upon 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 which 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 period of two years. (No additional fee is required.) Please check current catalog for deadline date. After two years of non-attendance from initial application, files are destroyed. An application fee is required if student applies again after that period.

ADMISSION TO THE UNIVERSITY

ADMISSION PROCESS

Admission to the University does not imply admission to graduate status.

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

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

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

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 the Admissions Office approximately one month before classes begin for the new semester. (See "Continuous Attendance" below.)

CONTINUOUS ATTENDANCE

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

1. A student may not be guaranteed continuing graduate status if he or she does not enroll in the University for a period of two major semesters (*Spring/Fall*). When a student applies for readmission, after having been out two or more semesters, the program will review the student's record to determine if he or she will be continued in graduate status or be reverted to post-baccalaureate status.
2. Graduation policy allows a student to fulfill degree requirements as listed in their official program of study. 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 degree requirements originally listed in their official program of study.

WITHDRAWAL POLICY

A student may withdraw from a class up to the end of the eighth week of any regular academic semester or until the midpoint of any summer term. No withdrawal after the deadline is permitted except in extraordinary circumstances. Students who need to petition for withdrawal after the deadline should contact the Office of the Dean of their college.

A student is never automatically withdrawn from a class by not attending. Failure to officially withdraw from a class will result in a grade of "F." Course withdrawal forms are available in the Records Office (normally open until 7:00 p.m. Monday through Thursday, and until 5:00 p.m. on Friday).

Upon request, the instructor will provide the student with an assessment of his or her performance in the course prior to the last day for withdrawal.

ADMISSION TO A GRADUATE PROGRAM

Upon receiving copies of all transcripts and standardized test information from the Admissions Office, the degree program coordinator will admit or deny the applicant recommend denial or admittance on REGULAR or PROVISIONAL degree-seeking graduate status.

APPEALS PROCEDURE FOR REJECTED STUDENTS

Students who are rejected by a program but who meet the SUS minimum standards for admission to graduate status are allowed under Rule 6C-6.03 to appeal that decision. Those applicants may request reconsideration by written petition to the University within thirty days of the date of denial. The route of appeal will be first to the college dean and then to the Associate Vice President for Academic Affairs for submission to the Graduate Council for recommendation to the Provost.

ADMISSION CLASSIFICATIONS

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

GRADUATE STATUS—REGULAR

The minimum system-wide requirements of the Board of Regents for admission to REGULAR graduate status are listed below. Additional requirements are specified by individual degree programs. All students who wish degree-seeking status must submit the GRE General Test score (or the GMAT score as required). Some programs also require the GRE Subject Test. Other programs may require a minimum GRE General Test score.

- (1) A baccalaureate degree or equivalent from a regionally accredited university and an earned GPA of 3.0 or more (on a 4.0 maximum) while registered as an upper-division undergraduate student (normally based on the last sixty semester hours) or a total score of 1,000 or higher on the General Test (quantitative-verbal sections) of the Graduate Record Examination (or a GMAT score of 500 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 consideration for admission to Graduate Status.

- (2) A student must be accepted by the program coordinator and the dean of the college offering the particular degree program sought. Requirements in addition to the minimums stated above may be specified by the individual degree programs.
- (3) International students must demonstrate their proficiency in the English language as one of the conditions of admission. All international applicants whose primary language is not English and who have not earned a degree from an accredited American college or university, must take the TOEFL (Test of English as a Foreign Language). Evaluations of the TOEFL score will reside with the program coordinator.

The Graduate Admissions Office of the University of Central Florida evaluates international student documents. International students must have official copies of all transcripts sent to Graduate Admissions along with a certified English translation of the transcripts. Additional information may be required to clarify a transcript; the student will be notified of such requirements. The following programs require only document evaluation: Computer Science, English, Health, Mathematical Science, Political Science and Statistical Computing. All other departments require course-by-course evaluations. Students must adhere to deadlines published in the catalog.

GRADUATE STATUS—PROVISIONAL

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

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

PROVISIONAL students may be admitted to REGULAR status following satisfactory completion of 9 semester hours and upon recommendation by the program coordinator and college dean. If a student does not maintain a 3.0 GPA in the graduate program of study, he or she will be placed on ACADEMIC PROVISIONAL status for 9 semester hours; then reverted to post-baccalaureate status if the GPA is still unsatisfactory. A student with regular or provisional status whose overall GPA falls below 2.0 will be reverted to post-baccalaureate status.

POST-BACCALAUREATE STATUS

Post-baccalaureate status is considered to be non-degree-seeking. A student is placed in this category for computer records when the application is received. If a student wishes to be degree-seeking, he or she must have official GRE or GMAT test scores sent to the Graduate Admissions Office, along with official transcripts. The graduate program evaluates these documents and makes a decision on admissibility to graduate status. International students are not eligible for post-baccalaureate status unless they hold a baccalaureate degree from a regionally accredited United States university.

A student may elect to remain in post-baccalaureate status for various reasons (e.g., requirements in a graduate program at another institution, personal improvement, meeting job requirements, and removing academic deficiencies). While in this category, a student is allowed to take graduate courses on a space-available basis only. Also while graduate status students register the first days of registration, post-baccalaureate students register the last day. Furthermore, not all departments accept post-baccalaureate students. For those departments which do accept post-baccalaureate students, the procedures for enrollment into graduate level classes vary with each department. In some cases, a department will control enrollment by closing graduate courses after the scheduled registration time for graduate status students, and then admit non-degree-seeking students only by special permission.

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



CHANGE OF MAJOR OR COLLEGE

When a student requests a change of major or college after having been admitted to a graduate program, the old program shall send the student to the new program. The new program coordinator will then admit the student to the new program as a graduate student or change him or her to post-baccalaureate status, whichever is appropriate. Change of major forms for post-baccalaureate students are completed by the student at the University Records Office.

DISMISSAL FROM THE GRADUATE PROGRAM

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

The student may appeal such a dismissal through the college to the Associate Vice President for Academic Affairs who will place it on the agenda of Graduate Council. Only in exceptional cases shall the student be readmitted to the program by the Graduate Council. In such cases, the student's entire program shall be re-evaluated and a new program will be submitted for consideration by the Graduate Council. It is entirely possible that additional courses will be required in the program of study before the student is allowed to continue in the graduate program.

SECOND MASTER'S DEGREE

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

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

TRANSCRIPT REQUESTS

Transcripts of a student's UCF academic record may be requested by the student through the Office of the Registrar. **A student's academic record can be released only upon written authorization by the student.** Include in the request the full name and social security number. Indicate 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 three transcripts are provided at no cost to the student. For additional transcripts, there is a charge of \$2.00 each. The check or money order should be made payable to: UCF. Cash payments can be accepted only by the Cashier's Office (Monday 9-6:30; Tues-Fri, 9-3:30). Students requesting transcripts may do so in person or by writing to: Transcript Request, Office of the Registrar, University of Central Florida, PO Box 160144, Orlando, FL 32816-0114.

INTERNATIONAL STUDENTS

UCF adheres to the principles 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.

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

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

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

The Graduate Admissions Office of the University of Central Florida evaluates international student documents. College of Business Administration applicants should send a transcript copy to *World Education Services* for evaluation. International students must have official copies of all transcripts sent to Graduate Admissions along with a certified English translation of the transcripts. Additional information may be required to clarify a transcript; the student will be notified of such requirements. The following programs require only document evaluation; Computer Science, English, Health, Mathematical Science, Political Science and Statistical Computing. All other departments require course-by-course evaluations. Students must adhere to deadlines published in the catalog.

International students are not eligible for postbaccalaureate status unless they hold a baccalaureate degree from a regionally accredited United States university.

INTERNATIONAL STUDENT MANDATORY HEALTH AND ACCIDENT INSURANCE

Each international student accepted for admission shall prior to registration, submit proof of compliance with the Board of Regents mandatory health and accident insurance (effective Fall semester, 1992).

Written proof of insurance, must be provided to the International Student Services Office and must be valid at all times. Cancellation of the policy, 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.



TUITION AND FEES

SCHEDULE OF FEES

A student's basic expenses at the University will be for registration fees, room and board, textbooks, other instructional supplies, and miscellaneous items.

Required fees are established by the Board of Regents and the Florida State Legislature and are subject to change without notice. Fees are affected by residency status. Information on residency is contained in the "Admission" section of this catalog.

All University fees must be paid at or before the end of the add/drop registration period. Failure to pay fees on or before due date will result in cancellation of the current registration.

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

General Fees and Costs (Subject to change without notice)

- A. Application fee. Must be paid by U.S. check or money order (required with all applications for admission to the University and not refundable) Effective 8/1/92..... \$20.00.
- B. Registration Fees per semester for campus, centers, and continuing education courses. Minimum registration of one credit hour (at the level the student is classified) must be charged for students registering for zero hours (co-op student on work assignment, applicant for graduation during the semester that student is not registered).

Fall, Spring and Summer Semester 91-92 Rates

	Florida Resident	Non-Florida Resident
Undergraduate ¹	\$49.16 per hour	\$187.11 per hour
Graduate Level ²	86.78 per hour	289.19 per hour

¹Undergraduate courses are those courses numbered 0-4999

²Graduate courses are those courses numbered 5000-7999

- C. Room and Board (Based on accommodations and meal plan selected)
 - Dormitory Rooms (per semester) \$810-\$1,080
 - Board (meal plans, per semester) \$548-\$984
 - Charge for late payment \$25.00
- D. Books and supplies (estimated) per semester \$230.00
- 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.
 - **Both** a \$50 late registration fee and a \$50 late payment fee will be assessed all students who do not pay by the deadline, are cancelled and are then reinstated.

All payments accepted **after** drop cards are mailed, approximately the third week of classes, must be cash, cashier's check or money order.
- F. Vehicle Registration (required of everyone operating a motor-powered vehicle on campus) per calendar year for full-time, part-time students, and courtesy students from other institutions. Student's fee \$40.00
- G. Student Health Fee—not refundable (per semester)
 - Assessed to all students except those enrolled exclusively in Continuing Education courses. This fee is also waived for senior citizens, for State employees under the fringe benefit plan, and for Intern Participation holders. University employees who use the Tuition Fee Waiver for class attendance may not elect to pay the Student Health Fee, regardless of the number of semester hours taken.
 - Fall & Spring Semesters \$43.00
 - Summer Semester \$32.00
- H. Certificate of Participation Holder \$ 4.76/hr.
- I. I.D. Card replacement \$ 5.00
- J. (Scientific Laboratory fees—fee per student on specific course(s) \$2.00 - \$15.00

K. Return Check Charge

Service charge on all returned checks is \$15.00 or 5%, whichever is greater, and results in the loss of check cashing privileges.

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 (this document must be dated at least one year prior to the first day of classes of the term for which resident status is sought). The following documents will be considered in determining legal residence:
 - A. Declaration of Domicile.
 - B. Proof of purchase of a home in Florida in which the student resides.
 - C. Proof that the student has maintained residence in the state for the preceding year (e.g., rent receipts, employment records).
- Documentation establishing bona fide domicile in Florida which is not temporary or merely incidental to enrollment in a Florida institution of higher education. The following documents will be considered evidence of domicile even though no one of these criteria, if taken alone, will be considered as conclusive evidence of domicile:
 - A. Declaration of Domicile.
 - B. Florida voter registration.
 - C. Florida vehicle registration.
 - D. Florida driver license.
 - E. Proof of real property ownership in Florida (e.g., deed, tax receipts).
 - F. A letter on company letterhead from an employer verifying permanent employment in Florida for the 12 consecutive months before classes begin.
 - G. Proof of membership in or affiliation with community or state organizations or significant connections to the State.
 - H. Proof of former domicile in Florida and maintenance of significant connections while absent.
 - I. Proof of reliance upon Florida sources of support.
 - J. Proof of admission to a licensed practicing profession in Florida.
 - K. Any other factors peculiar to the individual which tend to establish the necessary intent to make Florida a permanent home and that the individual is a bona fide Florida resident, including the age and general circumstances of the individual.
- No contrary evidence establishing residence elsewhere.
- Documentation of dependent/independent status (notarized copy of most recent IRS tax return).

OR

Become a legal resident and 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 the Admissions Office.

The Admissions Office reserves the right to require additional documentation as seen necessary to accurately determine the resident status of any student.

APPEALS

Students who wish to appeal a late registration, late payment, or return check service charge fee may make their appeal to the Appeals Committee by initiating a student petition (Form 41-561). This form can be obtained from the Offices of Undergraduate Studies, Student Affairs, 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 which meets once each week.

CHECK CASHING

The University Bookstore cashes personal checks not exceeding \$50.00. The University collects a \$15.00 service fee, or five percent (5%) of the check amount, whichever is greater, for personal checks, drafts, or orders which are returned as uncollectible. Future check-cashing privileges may be denied.

PAST-DUE ACCOUNTS

All financial obligations to the University must be met if good standing is to be maintained. Failure to meet obligations can result in the withholding of grades and transcripts, and 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 ON ACCOUNT

The University cashier will accept personal checks for accounts due to the University.

REFUND OF FEES

A refund of fees, or a reduction in fee liability for those students who have an authorized deferment, will be made upon presentation to the Student Accounts Office a Certification of Withdrawal issued by the Registrar. No refund or reduction in fee liability will be made under this policy except upon proper application.

1. A FULL REFUND will be made when:

A. Withdrawal is made before the end of the add/drop period. Summer refunds will not be made until after Term B Registration and add/drop, except by written application to Student Accounts, Room 112 Administration Building.

B. The course is cancelled by the University, or

C. A student is denied admission to an offered course for any reason.

2. A PARTIAL REFUND (25 percent of the total fees paid, less building and capital improvement fees) will be made when complete withdrawal from the University is made prior to the end of the fourth week of classes, during a 16 (or 17) - week semester or at the end of the first quarter of classes during a mini-semester or summer semester (rounded to the end of the week in which the first quarter occurs).

3. Refunds up to 100 percent of tuition and registration fees will be made upon withdrawal from one or more courses when exceptional circumstances exist, as determined by the University. Exceptional circumstances include, but are not limited to illness, death, involuntary call to military service, and administrative error created by the University.

Application for a full refund is made through the Office of Undergraduate Studies (AD 210) or the Office of Graduate Studies (AD 143).

TUITION FEE WAIVERS FOR STATE OF FLORIDA EMPLOYEES

State employees who utilize a tuition fee waiver for eligible coursework for up to six credit hours without payment of the registration fees register as provided in the class schedule. Employees who register prior to the prescribed time and date have an invalid fee waiver, and are liable for all applicable fees on courses enrolled. Employees register on a space-available basis. The tuition fee waiver can not be used for courses having increased costs (such as Thesis, Dissertation, and Directed Individual Study).

TUITION FEE WAIVERS FOR SENIOR CITIZENS

Persons 60 years of age or older who meet Florida residency requirements may register for credit classes without payment of application fee, registration fee, and health fee. Senior citizens register only on a space-available basis, and only during the last hour of the add/drop registration period prescribed in the class schedule. Academic credit is not awarded for completed courses. The fee waiver can not be used for courses which have increased costs. These courses would include, but not be limited to Thesis, Dissertation, and Directed Individual Study.



ORGANIZATION OF GRADUATE PROGRAMS

THE GRADUATE COORDINATORS' COMMITTEE

The Graduate Coordinators' Committee is responsible for the monitoring of minimum University-wide standards concerning graduate admission and matriculation. It also coordinates the graduate programs of the various colleges of the University, although responsibility for the detailed operation of the various graduate programs is vested in the individual colleges.

The Graduate Coordinators' Committee consists of the Graduate Program Coordinators from each of the colleges who are responsible for their graduate programs, the Registrar, the Dean of Undergraduate Studies (Associate Vice President for Student Academic Services) and the Associate Vice President for Academic Affairs (committee Chair). The committee shall consider all administrative (non-policy) graduate processes, procedures and details such as admissions categories, graduate student workloads, stipends and course loads, forms and records used in graduate admissions, etc., and shall establish the parameters to be used in the colleges' annual status reports on graduate education to the Provost.

THE GRADUATE COUNCIL

The Graduate Council is an advisory body to the Vice President for Academic Affairs (Provost). Its functions are to:

Recommend minimum university standards for admission to graduate programs and for granting graduate degrees.

Review and make recommendations concerning all proposed new graduate programs.

Act as the graduate curriculum committee to review and make recommendations to the Vice President for Academic Affairs concerning proposed new graduate courses; review and make final decisions on graduate course revisions and course deletions.

Review and make recommendations concerning existing graduate programs at least every five years; review and make recommendations on the current operating procedures of all graduate programs.

Review and make recommendations concerning appeals (by petition) from students for exceptions to University policies or admission decisions. Appeals normally begin at the Graduate Program level and exhaust all academic college channels before being heard by the Graduate Council. Only formal appeals of denials by the college or program will be heard by the Council.

GRADUATE PROGRAMS

Coordinator of Graduate Programs: Frank Juge, Associate Vice President of Academic Affairs, ADM 317, Phone (407) 823-2496.

UCF Authorized Graduate Degree Programs and Coordinators

Degree	Program	Coordinator	Phone	Room
Arts and Sciences				
M.S.	Biology	Dr. Kuhn	823-2141	BIO 110
M.S.	Chemistry, Industrial	Dr. Elsheimer	823-2246	CHM 332
M.A.	Communication	Dr. Pryor	823-2681	HFA 528A
M.S. & Ph.D.	Computer Science	Dr. Dutton	823-2341	CC II 206
M.A.	English	Dr. Barnes	823-2212	HFA 433
M.A.	History	Dr. Kallina	823-2224	HFA.505A
M.S.	Mathematical Science	Dr. Andrews	823-6284	PH 411
M.Sd. Ph.D.	Physics	Dr. Saha	823-2325	HPB 310
M.A.	Political Science	Dr. Handberg	823-2608	HFA 430
M.S.	Psychology, Clinical	Dr. McGuire	823-2216	PH 322
	Psychology, Industrial	Dr. Burroughs	823-2216	PH 302K
Ph.D.	Psychology, Human Factors	Dr. Gilson	823-2755	PH 311
M.A.	Applied Sociology	Dr. Lynxwiler	823-2227	HFA 423
M.S.	Statistical Computing	Dr. Schott	823-2289	CC II 226

Business Administration

Ms. Putchinski

823-2186

BA 241

M.B.A.	Business Administration
M.A.A.E.	Applied Economics
M.S.A.	Accounting
M.S.T.	Taxation
Ph.D.	Business Administration

Education

Dr. Lynn

823-3382

ED 328

M.Ed. & M.A.	Elementary, Secondary and K-12
M.Ed.	Instructional Technology: Educational Media
M.A.	Instructional Technology: Instructional Systems
M.S.	School Psychology
Ed.S.	Specialist degrees in Educational Leadership or Curriculum/Instruction
Ed.D.	Doctoral degrees in Educational Leadership or Curriculum/Instruction

Engineering

Dr. Gunnerson

823-5091

ENG 281F

M.S., Civil & Environmental

Dr. Hartman

823-2317

ENG 247

- M.S.C.E., Engineering
- Ph.D.
- Construction
 - Structures & Foundations
 - Transportation Systems
 - Environmental Sciences

M.S., Computer Engineering

Dr. Matthews

823-2318

ENG 407C

M.S.CpE., Computer Systems

Ph.D., Engineering Systems Analysis

M.S.E.E., Electrical Engineering

Dr. Mathews

823-2318

ENG 407C

Ph.D., Electrical Systems & Sciences

M.S., Industrial Engineering

Dr. Sepulveda

823-5307

ENG 246

M.S.I.E., Computer Integrated Manufacturing

Ph.D., Engineering Management

• Operations Research

• Product Assurance Engineering

• Simulation Systems

M.S.M.E., Mechanical & Aerospace

Dr. Eno

823-2271

ENG 381B

Ph.D., Engineering

• Materials Science & Engineering

• Mechanical Systems

• Thermo-Fluids

Health and Public Affairs

M.A., Communicative Disorders

Dr. Hedrick

823-2354

HPB 118

M.S., Health Sciences

Dr. Mendenhall

823-2406

HPB 214

M.S., Molecular Biology &

Microbiology

Dr. Gennaro

823-5932

BIO 331

M.P.A., Public Administration

Dr. Colby

823-5365

PH 102

UNIVERSITY GRADUATE REGULATIONS

The following are minimum University-wide standards for the operation of graduate programs. Additional requirements for each graduate program are described in the individual college descriptions (see Arts & Sciences, Business Administration, Education, Engineering, Health & Public Affairs).

MASTER'S PROGRAMS

STUDENT'S RESPONSIBILITY

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

EXCEPTION TO GRADUATE REGULATIONS

When unusual situations arise, petitions for exceptions to graduate regulations must be approved by the appropriate department and college. Only formal appeals of denials by the college or program will be heard by the Graduate Council. Appeals must be submitted in writing to the Associate Vice President for Academic Affairs who will submit them to the Graduate Council.

MASTER'S COMMITTEE OR ADVISOR

Appointment of Committee or Advisor

It is the responsibility of the appropriate academic dean of the college or the coordinator of the program granting the degree to (1) determine whether an advisory committee or an advisor will be used and (2) approve the necessary appointments. The Provost reserves the right to place a representative on any advisory committee or to appoint a co-advisor.

Advisory Committee

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

PROGRAM OF STUDY

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

UCF EMPLOYMENT

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

COURSE REQUIREMENTS

Course Loads

Normally, a full-time graduate student must take at least 9 hours per semester, with 12 semester hours being the maximum load. However, in order to meet residency requirements, doctoral students must register for 9 hours in two contiguous terms.

During the terms a student is employed as a teaching assistant or registered for special courses such as thesis, dissertation research, or dissertation writing, the hours may vary. Full-time for doctoral students during the summer in these cases would be 3 hours, and half-time would be one hour.

Students applying for assistance under Public Law 89-358 (Veterans Readjustment Benefits Act of 1966) must check with the Veterans Certification Office. A graduate student must register for 6 semester hours to qualify for full-time status veterans benefits. A post-baccalaureate student who anticipates graduate status must check with the Veterans Certification Office for up-to-date information. (Also see VETERANS BENEFITS and OFFICE OF VETERANS AFFAIRS.)

Total Hours Required

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

Thesis Degrees

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

Non-Thesis Degrees

At least 50 percent of the credits offered for the degree must be in a single field of concentration. *A research report is required for this degree.* Some colleges offer a 36 credit hour, course work only option, in which a thesis or research report is not required.

Enrollment Requirement

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

Language Requirements

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

Directed Independent Studies Courses

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

APPLICABLE CREDITS AND COURSES

Residence Credit

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

Credit By Examination

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

Transfer of Credit

Work taken 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:

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

There is no maximum of hours on transfer work taken while in graduate status in another major at UCF except for what the program will allow. No more than 9 semester hours of graduate credit may be transferred into the graduate program from UCF post-baccalaureate work or SUS work. Work taken at other institutions has a maximum limit of 6 semester hours. However, any combination of the above transfer hours (except UCF graduate work) cannot exceed 9 hours.

Institutions not in the State University System must be fully accredited by a regional accrediting association of the Commission on Accreditation (e.g., the Southern Association of Colleges and Schools).

In all instances, only grades of B or better can be transferred.

Correspondence courses are not acceptable toward a graduate program of study; however, extension or continuing education courses may be accepted.

Recency of Credit

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

EXAMINATIONS

Evaluation

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

Comprehensive Examination

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

COURSE LEVELS OF GRADUATE WORK

6000-Level Courses. A minimum of one-half of the credit hours--including thesis hours--of an individual's program of study must be in 6000-level courses, which are designed exclusively for graduate students. Exceptions to this requirement must be approved by the college Graduate Program Coordinator. Exception to this rule has been granted to the Computer Science, Mathematics, and Statistics programs.

Undergraduate registration in 6000-level courses is allowed only with prior approval by the college. 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.

5000-Level Courses. Courses at the 5000 level may be utilized toward satisfying the graduate degree requirements.

Other. Under special circumstances 4000-level courses may be applied toward a master's degree, but not in excess of 6 semester hours. Courses at the 3000 level or below shall not be utilized in a graduate program of study unless permission is obtained from the college prior to enrollment in the course.

ACADEMIC STANDARDS

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 filed with the Office of the Dean (not including required prerequisites).

A minimum of a 3.0 GPA in the specified graduate program of study is required to maintain graduate student status and for graduation.

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

No graduate level courses with a grade of "D" are acceptable in a program of study. In addition, no 4000-level courses or transfer courses with a grade of "C" or lower are acceptable in the program of study.

Graduate students whose overall GPA falls below 2.0 will be reverted to post-baccalaureate status.

Thesis and Research Report Grades

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

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

Maximum Hours of Unsatisfactory Grades

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

Incomplete Grade

A grade "I" (incomplete) is assigned by the instructor when a student is unable to complete a course due to extenuating circumstances, and when all requirements can clearly be completed in a short time following the close of regular classes. The Registrar's Office must be notified of the appropriate grade to be assigned no later than the date shown in the academic calendar of the term immediately following that in which the "I" was assigned. Failure to complete course requirements by that day may, at the discretion of the instructor, result in the assignment of an "F" grade. It is the student's responsibility to arrange with the instructor for the changing of the "I" grade to receive credit. Both the new grade and the letter "I" will appear on the student's permanent record. If the "I" grade is not changed by the established deadline, it becomes a part of the student's permanent record and no credit is given for the class. A student may register for a course in which an "I" was received, but no repeat "R" action will be made on the permanent record.

Review of Performance

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

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

If a student is reverted to post-baccalaureate status, reinstatement to graduate student status can occur only through a successful petition to the college by the student.

DEGREE APPLICATION PROCESS

Application for Degree

An Intent to Graduate form must be filed in the University Records Office by the end of the first week of the term of graduation. If the student does not graduate in that term, a new form must be filed at the beginning of the term of anticipated graduation. An extension can be obtained by telephoning the Records Office to have the old form updated if graduation is to be the following term.

Certification for Degree

The college of the degree program must certify through the Office of the Dean that all University and program of study requirements have been met.

Registration in Term of Graduation

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

DOCTORAL PROGRAMS

UNIVERSITY ADMISSIONS STANDARDS

Admission to graduate status generally requires a minimum of a 3.0 GPA in the last 60 semester hours of undergraduate studies, or a score of at least 1000 on the combined verbal-quantitative portion of the appropriate admissions examination (GRE or GMAT), or a master's degree from an accredited institution and GRE or GMAT scores. Admission to graduate status does not constitute admission to a doctoral program. Meeting minimum University admission standards for graduate status 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 is used for the examination (optional by programs) which the student takes prior to being admitted to Doctoral (or Specialist) status.

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.

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

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

DOCTORAL STATUS

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. The decision to accept the student in a doctoral program is made by the graduate committee of the program area concerned and the Dean of the college on the basis of qualifying examinations and/or other criteria as specified by the individual program area.

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 Dean of the college.

COURSE REQUIREMENTS

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

ACADEMIC STANDARDS

Academic standards for doctoral and specialist students will meet or exceed those previously stated for masters 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 hours 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

The number of transfer credit hours to be applied to the minimum course requirement for a doctoral degree at UCF will be up to 30 semester hours of credit and will be determined on a case-by-case basis by the graduate committee of the program area at the time the student is admitted to the program. The transfer hours from the master's degree or post-master's work will consist of a maximum of six hours of 4000-level work, no 3000-level courses, and no courses with grades of less than "B." The College of Engineering allows up to 36 credit hours, including up to 6 thesis credits, to be transferred from the masters program.

TIME LIMITATION

The student has seven years from the date of admission to the doctoral program to complete the dissertation.

CANDIDACY

Admission to Candidacy

Admission to candidacy will occur after the student has satisfied all general degree requirements, has passed the general Candidacy Examinations, and has successfully defended the Dissertation Proposal.

Candidacy Examinations. Candidacy examinations are mandatory for admission to candidacy and are to be held at the completion of the student's course work and prior to the dissertation stage. These examinations must be written and should be based on the student's plan of study. In the examination the student is expected to demonstrate substantial mastery of the general knowledge of the field, including theory, bibliography and research methodology. These written examinations shall be administered and supervised on campus, and will be set up by the program area in coordination with the college. All written original examination materials will be kept in a permanent file.

Dissertation Proposal Examination. After passing the general candidacy examinations, the student must develop a written dissertation proposal which will be defended by the student in an oral examination conducted by the dissertation committee.

Status as Candidate

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

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

Dissertation Committee Composition. A committee, which will consist of a minimum of four faculty members (three from the college in which the program is located and one from outside that college) and must be approved by the Dean of the college. Program areas may further specify committee membership. All members should be in fields related to the dissertation topic. All members vote on acceptance or rejection of the dissertation. The dissertation must be approved by a majority of the committee.

Dissertation. Dissertations are required in all doctoral programs. An oral defense of the dissertation is required with copies of the approved dissertation being prepared in accordance with program requirements and sent to University Microfilms International (UMI). Final unbound copies of the dissertation will be submitted to the college before the specified deadline.

Dissertation Defense. The Dean of the college or his/her designee will attend all dissertation defenses.

Certification for Degree

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

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. Faculty advisors and students should consult the *Instructions for Preparing Theses and Dissertations* for deadlines. 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 candidate before this stage begins.



STUDENT AFFAIRS

INTRODUCTION

The term "student affairs" is used collectively to refer to the Student Affairs Division and its many functional departments responsible for the administration and management of programs, services, facilities, and activities designed to support the educational mission of the University. The Division of Student Affairs, exist primarily to enhance the teaching and learning process through its many programs and services. The Division, headed by a Vice President for Student Affairs, administers programs involving orientation, personal counseling, testing, housing, health services, international student services, recreational services, career planning and placement, student organizations, veterans' affairs, and other special activities. Students are invited to consult the staff of Student Affairs concerning any aspect of campus life.

Personal development may be enhanced through informed, experienced, and dedicated participation in University and community activities. Frequently, activities are referred to as "extracurricular," but at the University of Central Florida student activities are regarded as a part of the total educational program—a supplement to the individual student's academic program. The University sponsors a variety of cultural and entertainment programs which contribute to the student's social, cultural, recreational, and academic development. Students can become better acquainted with fellow students and faculty members through participation in student activities. The University provides ample opportunity to become a member of occupational, professional, social, and honorary organizations.

OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is the primary source for students seeking information on non-academic areas of the University. The office staff strives to introduce students to educational opportunities designed to provide personal, social, and academic growth outside the classroom. Additionally, the Deans supervise the judicial affairs process as well as counsel students confronted with a variety of difficulties, referring students for specialized professional services as necessary.

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

ACADEMIC BEHAVIOR STANDARDS

The University of Central Florida is committed to a policy of honesty in academic affairs. Examples of conduct for which students may be subject to academic and/or disciplinary penalties including expulsion are:

Cheating whereby non-permissible written, visual or oral assistance including that obtained from another student is utilized on examinations, course assignments or projects. The unauthorized possession or use of examination or course related material may also constitute cheating.

Plagiarism whereby another's work is deliberately used/or appropriated without any indication of the source, thereby attempting to convey the impression that such work is the student's own. Any student failing to properly credit ideas or materials taken from another has plagiarized.

NOTE: A student who has assisted another in any of the aforementioned breach of standards shall be considered equally culpable.

In cases of cheating or plagiarism, the instructor may take appropriate academic action ranging from loss of credit for a specific assignment, examination or project to removal from the course with a grade of "F". Additionally, the instructor may request disciplinary action through the Dean of Students Office as outlined in *The Golden Rule*.

CONFIDENTIALITY OF STUDENT RECORDS

The procedures for the confidentiality of student records are based on state regulations and the federal Family Educational Rights and Privacy Act of 1974. Students who have questions or specific requests concerning the confidentiality of records should contact the

Office of the Dean of Students. Details of the University practices for confidentiality are presented in *The Golden Rule*.

STUDENT GOVERNMENT

The purpose of Student Government is to provide a system whereby students can effect progressive changes that bring about improvements in campus life. Student Government also endeavors to promote better communication and understanding among the UCF family and to provide certain services which impact student life. All enrolled students at UCF campuses, both graduate and undergraduate, are considered active members of Student Government who are allowed to voice their opinions through senate representatives. Funds available from the Activity and Service Fee paid by students are used to provide numerous activities and services to students to support their academic endeavors at UCF. SG is effective at ensuring that the voice of the student is recognized at the state and local levels.

The democratic processes of SG is grounded in the fundamental structure of the U.S. Government. The executive, legislative, and judicial branches have representatives from each college at UCF. The structure of SG provides an atmosphere that reflects the democratic processes of the real world thus providing students an opportunity to become education and experienced in practical situations.

Some of the services made available to students and funded by student activity and service fees are: legal services, computer lab, discount entertainment tickets, free local telephones, and vehicles for clubs' and organizations' use.

Students interested in working with SG may obtain information from the SG offices located in the Student Center.

STUDENT LEGAL SERVICES

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 non-criminal traffic. Each eligible student (an undergraduate enrolled in six UCF hours or graduate enrolled in four UCF hours) is entitled to consult with the Program Attorney about any legal matter not excluded by program guidelines, free of charge. Students in need of legal services should contact Student Legal Services at (407) 823-2538, or Student Center Room 210. This service is by appointment only, and no legal advice is given over the phone.

CLASSROOM RESPONSIBILITY

Students are responsible for maintaining classroom decorum appropriate to the educational environment. When the conduct of a student or group of students varies from acceptable standards and becomes disruptive to normal classroom procedures, the instructor has the authority to remove the offending party from the room.

STUDENT CONDUCT

Students are subject to federal, state and local laws and ordinances as well as regulations prescribed by the University of Central Florida and the Florida Board of Regents. The breach or violations of any of these laws or regulations may result in disciplinary action. Detailed conduct regulations and procedures are presented in the student handbook, *The Golden Rule*.

A person applying for admission to UCF who has been charged with a criminal offense may have the circumstances of the case reviewed by the appropriate Student Affairs administrator to consider eligibility for admission.

SERVICES

UNIVERSITY COUNSELING AND TESTING CENTER

The University Counseling and Testing Center (Recreational Services Building, Room 203) 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 relaxa-

tion 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

The Career Planning and Placement Office, located in Suite 124 of the Administration Building, is a career resource center for all University of Central Florida students and alumni. The Center provides individualized counseling about current and projected trends in the job market. Services also include: resume advice and critiquing, CHOICES—(computerized career guidance), career planning mini-classes, resume referrals at employers' request, on-campus interviews by employers, lists of full-time and part-time job vacancies, interviewing tips, and help in organizing a job search.

The Career Resource Center provides information about a broad cross section of employers.

To make the most effective use of the Placement Service, students are urged to register with the office two semesters prior to graduation.

Further information may be obtained by visiting the Center or telephoning (407) 823-2361.

HOUSING

Regularly enrolled single students paying registration fees for a minimum of nine semester hours may apply for assignment to University residential units. Currently, there are seven residence halls on the campus of the **University of Central Florida**. The total combined designed capacity of the seven halls is **867 spaces**. Because of the limited amount of space in University housing facilities, the University does not require any student to live on campus. **There are no on-campus accommodations for married students.**

Priority for assignment is given to incoming Freshmen who will occupy approximately **50 percent** of the University's housing capacity and current residents who will occupy most of the remaining spaces. Applicants should **CAREFULLY READ** the application before submitting it to the Housing Office along with a **Letter of Acceptance** to the University and the **\$150 prepayment**.

OFF-CAMPUS HOUSING

Within two miles of the UCF campus are numerous apartments and duplex communities, in addition to a privately-owned residence hall complex. Sidewalks, bike paths, and Tri-County bus service connect many of these facilities with the University. Students living off-campus are invited to participate in one of the University meal plans.

STUDENT HEALTH SERVICES

Recognizing the importance of lifestyle in health and the prevention of disease, the Student Health Service combines quality care for illness and accidents with an aggressive health education and lifestyle enhancement program. A Student Wellness Advocate Team enhances the health promotion efforts of the Student Health Center.

The Student Health Center (SHC) is staffed by medical doctors, a certified nurse practitioner, physician's assistant, Registered Nurses, and a full complement of other medical support personnel. Full referral service to Orlando area specialists is established. Charges incurred outside the Student Health Center are the responsibility of the student. A variety of laboratory and x-ray tests are available at the Student Health Center. Testing for HIV (AIDS virus) is not done in our laboratory. Referral arrangements may be made for anonymous AIDS testing by contacting the Chief Nurse at the Student Health Center at (407) 823-2701, ext. 5275.

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

By Board of Regents regulation, each student must demonstrate Rubella and Rubeola immunity prior to registration. The Student Health Center cannot provide immunization services to meet this requirement. It is a pre-registration requirement and prospective students are not eligible for services at the SHC. A routine health history form is also completed prior to registration, and this information is used for background purposes in providing medical care services. Medical records are held in the strictest confidence.

Each health fee paying student is entitled to the benefits outlined in the SHC brochure; faculty and staff can only be seen on an emergency basis, and then for a fee (except

Worker Compensation cases). Optional health and accident insurance may also be purchased by contacting the office of Student Affairs or Student Government (please note optional health and accident insurance is not part of the Student Health Center program and will provide a variety of coverages for health needs beyond the scope of Student Health Services).

Blood drives are held several times annually by the Central Florida Blood Bank. Students, faculty, and staff are eligible for credits from the blood bank upon demonstrating need.

STUDENT CENTER

Student life at the University of Central Florida emanates from the Student Center. As the focal point for campus activities, the Student Center serves students, faculty, staff, patrons, alumni, and guests with its many programs, services, and facilities. The Student Center is funded through Activity and Service fees as allocated by Student Government.

Several student organizations flourish in the Student Center. The Campus Activities Board sponsors a wide variety of educational and entertaining programs for the UCF campus community. The Student Government Association provides for active leadership experiences through the Senate and committees working for student rights. The Orientation Team coordinates the orientation programs. Greek Council promotes membership in, and operation of, Fraternities and Sororities.

The Student Center provides other services for students as well. The Game Room offers billiards, ping pong and video games. Student Government Association operates a Macintosh computer lab. There are four food services facilities, an information desk, conference and meeting rooms, and the Student Center Auditorium. Reservations for university facilities can be made at the Student Center Information Desk. The Student Center Director is located in SC 198. For more information regarding the Student Center, call 823-2633.

STUDENT ORGANIZATIONS

Student Organizations play a vital role in enhancing student life at the University of Central Florida. Academic, pre-professional, honorary, military, minority/international, religious, service, social, special interest, and sports are the ten categories of the over 150 organizations available. The Student Organizations Office publishes a *Student Organization Handbook* listing all of the organizations at UCF and their purposes.

For further information regarding clubs and organizations, call (407) 823-5107 or visit the Student Organizations Office, Student Center, Room 215.

RECREATIONAL SERVICES

The Office of Recreational Services offers a wide variety of sports and recreational opportunities to the students of UCF and their immediate families and some opportunities to UCF faculty, staff, and the surrounding community.

These opportunities include intramural sports leagues and tournaments, organized recreation and fitness programs, unstructured open recreation, sports-related special events, screen printing and racquet stringing. Equipment may be checked out for use on and off campus.

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

OFFICE OF STUDENT INFORMATION AND EVENING/WEEKEND STUDENT SERVICES

The Office of Student Information and Evening/Weekend Student Services is a one-stop communications network and information center committed to gathering and disseminating information to students. The office is also responsible for the administrative supervision of student affairs functions for all University students taking evening and weekend classes and for the administration and programming of the 24-hour Student Information Buzzline, (407) 823-5479. The office phone number is: (407) 823-3111.

Information Booth & Evening Student Services

9:00 a.m. to 9:00 p.m.

Monday through Thursday—

second floor Administration Building,
Education Building Lobby, and College of
Business Information Booth

9:00 a.m. to 5:00 p.m.

Friday (same locations as above)

INTERNATIONAL STUDENT SERVICES

The International Student Office provides services for all international students and resident aliens. Its central role is to assist International students and scholars attending UCF to adjust to the changing 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 the UCF international community, such as issuance of immigration forms I-20 A/B and IAP-66, assistance in locating off-campus apartments, counseling on personal, financial, academic, and cross-cultural communication matters, advisement in immigration and tax matters, promotion of social activities, and home visits in Central Florida. Further information may be obtained from the International Office, Administration Building Suite 225, or by calling (407) 823-2337.

HANDICAPPED STUDENT SERVICES

Handicapped Student Services provides information and orientation to campus facilities and services, assistance with classroom accommodations, assistance with course registration, handicapped parking decals, counseling, and referral to campus and community services for students who are handicapped.

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.

The University application for admission contains no question regarding disability. Therefore, students who have a disability or handicap which may require special assistance are requested to voluntarily contact the Office of Handicapped Student 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 are handicapped.

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

Further information may be obtained from the Handicapped Student Services Office, Administration Building Suite 282, Phone (407) 823-2371.

CREATIVE SCHOOL FOR CHILDREN

The Creative School for Children provides an educational program, including kindergarten, for children two through five years old. The daily program is planned and conducted by Florida-certified 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 also made available to University students. Opportunities for educational research are available to University faculty and graduate students.

The school conducts a Summer Day Camp for elementary school children during Summer "B" semester.

For further information, call the Creative School for Children, (407) 823-2726.

OFFICE OF VETERANS' AFFAIRS

The Office of Veterans' Affairs (OVA) is a center for all veterans, including students who are using VA educational benefits to further their education. The office, located in room 132 of the Student Center, has a professional staff augmented by student veterans to assist in providing information concerning entitlements, 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 eligible dependents eligible to receive VA benefits must make initial contact with the Veterans Certification Office.

Veterans and eligible dependents who are fully accepted in a graduate degree program, or post-baccalaureate students pursuing a Florida Teaching Certificate, are required to carry 6 semester hours in courses numbered 5000 and above for full-time benefits; 4-5 semester hours in courses numbered 5000 and above for three-quarter time benefits; and 3 semester hours in courses numbered 5000 and above for half-time benefits. Students may take undergraduate courses, if a required part of the program, but when taken a different method is used to compute training time. Contact the Office of Veterans Affairs for clarification and guidance.

Students who are classified as post-baccalaureate, and working towards a graduate degree, must carry at least twelve (12) semester hours for full VA benefits, 9-11 semester hours for three-fourths, and 6-8 semester hours for one-half. Five (5) semester hours or less will be reimbursed at the cost of tuition and fees or quarter time depending on DVA Chapter. Veterans and eligible dependents who are pursuing course work while in a post-baccalaureate status can only receive benefits for courses which will be accepted for transfer into a graduate program when they are given graduate status (normally 9 semester hours). Students pursuing CPA or Real Estate examination review, or other special non-degree programs will receive benefits for all courses required by their program of study.

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 re-started. 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.

For further information, contact the Office of Veterans Affairs, 1000 University Avenue, Room 1000, Gainesville, FL 32601. Phone: (352) 339-3377.

CREATIVE SCHOOL FOR CHILDREN

The Creative School for Children provides an educational program, including kindergarten, first, second, and third grades, for children two to five years old. The daily program is tailored and controlled by Florida-certified teachers. The program provides a wide variety of experiences in art, music, language, motor skills, social skills, science, mathematics, and physical education. The program also includes a variety of enrichment activities, including field trips, guest speakers, and special events. The program is designed to provide a stimulating and enriching educational experience for children. For more information, contact the Creative School for Children, 1000 University Avenue, Room 1000, Gainesville, FL 32601. Phone: (352) 339-3377.

The Creative School for Children is a non-profit organization. For more information, contact the Creative School for Children, 1000 University Avenue, Room 1000, Gainesville, FL 32601. Phone: (352) 339-3377.

OFFICE OF VETERANS' AFFAIRS

The Office of Veterans Affairs (OVA) is a division of the University of Florida, Gainesville. The office provides a variety of services to veterans and their families, including information on educational benefits, financial aid, and other resources. The office also provides a variety of other services, including counseling, support groups, and other resources. For more information, contact the Office of Veterans Affairs, 1000 University Avenue, Room 1000, Gainesville, FL 32601. Phone: (352) 339-3377.

PROGRAM AND COURSE DESCRIPTIONS

The remainder of the catalog lists the graduate programs now available at the University of Central Florida. These are arranged first by College, and then by the individual program. Within each program there is a listing of the faculty, a description of the program, the requirements necessary for graduation, and a list of the courses available.

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

CLASSIFICATION OF COURSES

3000-4999 are junior- and senior-level courses and are designed primarily for advanced undergraduate students. Selected 4000-4999 courses may serve the needs of the individual graduate students if approved for inclusion in an individual program of graduate study by a supervisory committee approved by the Dean of the college.

5000-5999 are beginning graduate-level courses.

6000-6999 are courses open only to graduate students.

7000 are doctoral-level courses.

FLORIDA STATEWIDE COURSE NUMBERING SYSTEM

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

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

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

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

GENERAL RULE FOR COURSE EQUIVALENCIES

All undergraduate courses bearing the same alpha prefix and last three numbers (and alpha suffix, if present) have been agreed upon to be equivalent. For example, an introductory course in sociology is offered in over 40 post-secondary institutions in Florida. Since these courses are considered to be equivalent, each one will carry the designator SOC--0000.

FIRST DIGIT

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

TITLES

Each institution will retain its own title for each of its courses. The sociology courses

mentioned above are titled at different schools "Introductory Sociology," "General Sociology," and "Principles of Sociology." The title does not affect the equivalency. The courses all carry the same prefix and last three digits; that is what identifies them as equivalent.

LAB INDICATORS

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

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

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

Examples: PSY 6318 (lecture only)

ENV 6017L (lab only)

PCB 6235C (lecture & lab combined)

SPECIAL COURSES

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

In order to register for any of the special numbers below, a student must present an authorization form (GS-10) obtained from the Department.

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

*For Graduate Status students only.

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

ABBREVIATIONS IN COURSE DESCRIPTIONS

PR denotes a PREREQUISITE course which must be earned prior to enrollment in the listed course.

CR denotes a COREQUISITE course which must be taken concurrently with or prior to the listed course.

C.I. denotes that registration is contingent upon the CONSENT OF THE INSTRUCTOR.

HOURS CODE

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

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

ECI 5215C carries 3 hours of credit, but requires 5 contact hours which consist of 2 hours in class and 3 hours laboratory or field work.

COLLEGE OF ARTS AND SCIENCES

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

COLLEGE ADMINISTRATION

<i>E. P. Sheridan</i>	Dean
<i>K. L. Seidel</i>	Associate Dean
<i>B. B. Morgan, Jr.</i>	Associate Dean
<i>B. A. Whisler</i>	Assistant Dean
<i>D. Velez</i>	Assistant Dean

ADVISEMENT

Graduate Office of Academic Support and Information Services (Grad - OASIS)

The Graduate Office of Academic Support and Information Services (Grad - OASIS) assists students in the College of Arts and Sciences in matters concerning College and University requirements and procedures. Admission materials, acceptance notification, program of study, graduate committee memberships, thesis and dissertation approvals, fellowship and financial aid information, waiver and petition forms, graduation certifications, etc., are processed through this office for all graduate students in the college. Questions concerning University and College graduate policies affecting Arts and Sciences majors should be directed to the Grad-OASIS staff in FA 207 or by calling (407) 823-0144.

Doctor of Philosophy

Computer Science
Physics
Psychology (Human Factors)

Master of Arts

Communication
English
History
Political Science
Sociology, Applied

Master of Science

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

GENERAL REQUIREMENTS

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

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

Each department is headed by a chair who reports to the dean of the college. A graduate program coordinator is designated for each program and is the key contact on questions of admission and degree requirements. Consult the individual degree program listings for descriptions of requirements and courses offered by each program.

ART

F. Martin Acting Chair
Office: VAC 117A, Phone (407) 823-2676

Art Courses

ARH 5451 Artistic Worldviews **3 cr (3,0)**
PR: Post-bac status, nine hours of art courses or C.I. Art from individual and cultural perspectives of varying ethnic, religious, occupational, regional, and generational groups.

ARH 5454 Found Arts **3 cr (3,0)**
PR: C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

ARH 5478 Contemporary Women Artists **3 cr (3,0)**
PR: Six credits of art courses or C.I. An indepth study on contemporary women artists from a feminist perspective.

ARH 5893 Critical Perspectives on Women Artists **AS 3(3,0)**
The cultural forces influencing women artists, and how those artists have been constrained or misrepresented by the language of art or by art history.

ARH 5933 Seminar in African & African-American Arts **3 cr (3,0)**
PR: ARH 3520. Research on questions regarding continuities between African and African-American (including Latin-American) arts. Themes include signs and scripts, charms, and textiles.

ART 5109C Multi-Cultural Crafts Design **3 cr (3,0)**
The content of this course will include an appreciation for and the production of Western and Non-Western art forms.

BIOLOGY

D. T. Kuhn Graduate Program Coordinator
Office: BIO 110, Phone (407) 823-2976

Biology Faculty

<i>L. M. Ehrhart, Ph.D.</i>	Professor
<i>L. L. Ellis, Ph.D.</i>	Emeritus Professor
<i>J. L. Koevenig, Ph.D.</i>	Professor
<i>D. T. Kuhn*, Ph.D.</i>	Professor
<i>H. A. Miller*, Ph.D.</i>	Professor
<i>J. A. Osborne, Ph.D.</i>	Professor
<i>F. F. Snelson, Jr., Ph.D.</i>	Professor
<i>I. J. Stout*, Ph.D.</i>	Professor
<i>H. C. Sweet, Ph.D.</i>	Professor
<i>W. K. Taylor*, Ph.D.</i>	Professor
<i>H. O. Whittier*, Ph.D.</i>	Professor
<i>D. H. Vickers, Ph.D.</i>	Chair and Associate Professor

*Hold graduate faculty status at USF.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for consideration for graduate status in any of the M.S. programs in Biology are a grade point average (GPA) of at least 3.0 for the last 60 semester hours of undergraduate study or a score of at least 1000 on the combined quantitative-verbal sections of the 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 helpful but not required. The department

requires international students and students whose native language is not English to have a minimum TOEFL score of 550.

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

Applicants need not have an undergraduate degree in a biological science but are expected to have the equivalent of 16 semester hours credit in the biological sciences, including at least 3 credit hours each in botany, and zoology; plus organic chemistry with laboratory; and basic college mathematics and statistics. After acceptance, minor deficiencies can be remedied by enrollment at the first opportunity in an appropriate course. Students receiving teaching or research assistantships are expected to maintain a minimum of 6 semester hours of approved graduate credit every term of departmental support.

Examinations

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

Programs in Biology

The Master of Science degree in Biology is offered with the following areas of specialization: biology, botany, limnology, 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 Ph.D. degree program is available to students in Biology at UCF through USF (University of South Florida) in collaboration with UCF. See USF graduate catalog for details. This program requires 90 semester hours beyond the baccalaureate. A student in this program takes course-work at both UCF and USF and is required to establish one year of USF residency. Language certification will be accomplished at UCF and proficiency in computer language established at either location. The Ph.D. degree will be granted at USF.

Master of Science Degree Requirements— Biology

THESIS OPTION

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

Group A (three of the six courses)

12-14 Semester Hours

PCB 5046C	Advanced Ecology	5 hours
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PCB 5675C	Evolutionary Biology	4 hours
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or

BOT 5705C	Plant Biosystematics	4 hours
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PCB 6585C	Advanced Genetics	5 hours
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PCB 6581	Comparative Animal Physiology	3 hours
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or

PCB 6365	Environmental Physiology	3 hours
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Group B (both courses)

8 Semester Hours

BSC 6938	Biology Seminar	2 hours
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BSC 6971	Thesis	6 hours
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Group C

Restricted electives acceptable to the student's graduate committee.

Total Minimum Semester Hours Required:	30
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NON-THESIS OPTION

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

Group A (three of the six courses)		12-14 Semester Hours
PCB 5046C	Advanced Ecology	5 hours
PCB 5675C	Evolutionary Biology	4 hours
	or	
BOT 5705C	Plant Biosystematics	4 hours
PCB 6585C	Advanced Genetics	5 hours
PCB 6581	Comparative Animal Physiology	3 hours
	or	
PCB 6365	Environmental Physiology	3 hours
Group B (both courses)		4 Semester Hours
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 advisor.		
Total Minimum Semester Hours Required:		40

DOCTOR OF PHILOSOPHY DEGREE REQUIREMENTS—BIOLOGY

A student selecting the collaborative Ph.D. dissertation option will complete the M. S. thesis option, or its equivalent.

Group A (M.S. thesis courses, or equivalent)		30 hours
Group B (USF residency, 10 structured hours plus 8 unstructured, in a single academic year, 9 hours/semester)		18 hours
Group C (Dissertation minimum)		16 hours
Group D (Special Topics, Seminars, other courses taken in consultation with Advisor)		26 hours
Total Minimum Semester Hours Required:		90

Biology Courses

BOT 5495C Bryology 3 cr (2,3)
PR: BOT 4303C or C.I. A lecture-laboratory survey course on the diversity and classification of mosses, liverworts and hornworts with special emphasis on those found in Florida.

BOT 5705C Plant Biosystematics 4 cr (3,2)
PR: Graduate standing or C.I. Evolutionary processes among plant taxa and populations utilizing cytology, morphology, biochemistry, breeding systems, and co-evolution.

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

BSC 6950 Biological Research Resources 3 cr (3,0)
PR: Graduate Status. Research methodology including literature resources, problem conceptualization, research proposals, data collection, and analysis and presentation of findings.

PCB 5044 Ecosystems of Florida 5 cr (3,2)
PR: PCB 3043, PCB 3043L or equivalent. Ecosystems of Florida will be discussed to include geography, geology, climate, energetics, nutrient cycling, community structure and conservation. Weekend field trips are required.

PCB 5045C Conservation Biology 4 cr (3,2)
PR: PCB 3043 and PCB 3063. Scientific basis of conservation; conservation of ecosystems, populations, exploited species, and endangered species. Weekend field trips are required.

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

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

PCB 6049 Contemporary Studies in Biology**2 cr (2,0)**

PR: Graduate standing. Analysis of current publications and developments in theory and concepts of biological sciences. May be repeated for credit as content is variable.

PCB 6365 Environmental Physiology**3 cr (3,0)**

PR: Physiology and ecology or C.I. The effects of major environmental factors on the physiology of plants and animals.

PCB 6581 Comparative Animal Physiology**3 cr (3,0)**

PR: PCB 3023 or PCB 4723 or C.I. Comparison of structural and functional adaptations of animal organ systems. Emphasis upon maximization of fitness under given environmental conditions.

PCB 6585C Advanced Genetics**5 cr (3,6)**

PR: PCB 3063 or C.I. Recent advances in genetics, stressing molecular and developmental trends.

ZOO 5456C Ichthyology**4 cr (2,6)**

PR: ZOO 3303C or C.I. Introduction to the biology of the fishes, their classification, evolution and life histories.

ZOO 5463C Herpetology**4 cr (2,6)**

PR: 6 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution and life histories.

ZOO 5475C Ornithology**4 cr (2,6)**

PR: 6 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution, and life histories.

ZOO 5483C Mammalogy**4 cr (2,6)**

PR: 6 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution and life histories.

ZOO 5815 Zoogeography**3 cr (3,0)**

PR: 8 hours of zoology or C.I. Principles and concepts concerning regional patterns of animal distributions of the world, both past and present.

BSC 6909 Research Report**2 cr****BSC 6971 Thesis****1-6 cr**

CHEMISTRY, INDUSTRIAL

Seth Elsheimer, Ph.D. Graduate Program Coordinator
Office: CH 332, Phone (407) 823-2246

C. A. Clausen, Ph.D. Professor
G. N. Cunningham, Ph.D. Professor
J. T. Gupton, Ph.D. Professor
G. R. Hertel, Ph.D. Professor
F. E. Juge, Ph.D. Associate Vice President and Professor
B. C. Madsen, Ph.D. Professor
G. Mattson, Ph.D. Professor
W. W. McGee, Ph.D. Professor
D.H. Miles, Ph.D. Chair and Professor
L. M. Trefonas, Ph.D. Professor
S. R. Elsheimer, Ph.D. Associate Professor
M. D. Hampton, Ph.D. Associate Professor
K. M. Beck, Ph.D. Assistant Professor
M. P. McCann, Ph.D. Assistant Professor

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 semester hours of undergraduate study or a score of at least 1000 on the combined quantitative-verbal sections of the General (Aptitude) test of the GRE. In addition, the departmental evaluation relies on letters of recommendation. Proficiency examinations are given to all incoming graduate students. The results of these exams are used in planning the student's program of study. Deficiencies may require remedial course work.

Program in Industrial Chemistry

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

Master of Science Degree Requirements— Industrial Chemistry

REQUIRED CORE COURSES

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

ELECTIVES

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

		12 Semester Hours
CHM 5235	Applied Molecular Spectroscopy	3 hours
CHM 5450	Polymer Chemistry	3 hours
CHM 5451	Polymer Chemistry Lab	2 hours
CHM 5711	The Chemistry of Materials	2 hours
CHS 5262	Industrial Chemical Processes	2 hours
CHM 5305	Applied Biological Chemistry	3 hours
CHS 6261	Chemical Process and Product Development	2 hours

EXAMINATION REQUIREMENTS

Satisfactory completion of a final examination is required.

Total Minimum Semester Hours Required: 30

Chemistry Courses

CHM 5235 Applied Molecular Spectroscopy 3 cr (3,0)

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

CHM 5305 Applied Biological Chemistry 3 cr (3,0)

PR: CHM 3211. The identification from plants, synthesis, assessment of bioactivity, and design of pharmaceuticals and agrochemicals, as well as the impact of biotechnology in the chemical industry.

CHM 5450 Polymer Chemistry 3 cr (3,0)

PR: CHM 3211. An introduction to the chemistry of synthetic polymers. Synthetic methods, polymerization mechanisms, characterization techniques and polymer properties will be considered.

CHM 5451 Polymer Chemistry Laboratory 2 cr (0,6)

PR: CHM 3211 and CHM 3410. A laboratory course designed to introduce students to the major polymerization mechanisms. Polymers synthesized in the laboratory will be characterized using modern instrumental methods.

CHM 5580 Advanced Physical Chemistry 3 cr (3,0)

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

CHM 5711 The Chemistry of Materials 2 cr (2,0)

PR: CHM 3211, 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 Kinetics and Catalysis 2 cr (2,0)

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

CHM 6710 Applied Analytical Chemistry 2 cr (2,0)

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.

CHS 5262 Industrial Chemical Processes 2 cr (2,0)

PR: CHM 3211 and 3411. Familiarization with basic considerations of large-scale inorganic and organic chemical manufacturing techniques, raw materials, and the petrochemical industry.

CHS 6240 Chemical Thermodynamics 2 cr (2,0)

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

CHS 6251 Applied Organic Synthesis 2 cr (2,0)

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 Chemical Unit Operations and Separations 2 cr (2,0)

PR: C.I. A study of the elements and dynamics that are fundamental to industrial separation methods and transport processes.

CHS 6261 Chemical Process and Product Development 2 cr (2,0)

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

CHM 6938 Seminar 2 hours

CHM 6971 Thesis 1-6 hours

COMMUNICATION

B. Pryor Graduate Program Coordinator
Office: HFA 528A, Phone (407) 823-5670 or 823-2681

R. L. Arnold, Ph.D.	Professor
R. H. Davis, Ph.D.	Professor
F. E. Fedler, Ph.D.	Professor
C. H. Harpole, Ph.D.	Professor
J. G. Hoglin, Ph.D.	Professor
M. D. Meeske, Ph.D.	Professor
M. T. O'Keefe, Ph.D.	Professor
B. Pryor, Ph.D.	Professor
K. P. Taylor, Ph.D.	Professor
D. Weider-Hatfield, Ph.D.	Professor
J. W. Welke, Ph.D.	Chair and Professor
J. F. Butler, Ph.D.	Associate Professor
W. K. Grasty, Ph.D.	Associate Professor
J. Maunez-Cuadra, Ph.D.	Associate Professor
J. B. O'Hara, Ph.D.	Associate Professor
R. F. Smith	Associate Professor
E. B. Wycoff, Ph.D.	Associate Professor
S. Andersen, Ed.D.	Assistant Professor
W. J. Hall	Assistant Professor
P. Jeffery	Assistant Professor

Admission

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

Programs in Communication

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

Master of Arts Degree Requirements— Communication

Students are required to complete 34 semester hours of work, including a thesis. Students must complete a basic core of courses in theory and methodology, and must successfully pass the program's comprehensive examination.

The curriculum for the master's degree includes the following courses:

REQUIRED COURSES

		21 Semester Hours
EDF 6401	Statistics for Educational Data or STA 4163, Statistical Methods II or STA 5206, Statistical Analysis	3 hours
SPC 6219	Modern Com. Theory	3 hours
SPC 5200	Evolution of Com. Theory or COM 6121, Communication Management or SPC 6938, Communication Conflict	3 hours
COM 6303	Communication Research I	3 hours
COM 6304	Communication Research II	3 hours
MMC 6603	Communication and Society	3 hours
SPC 6442	Small Group Communication	3 hours

ELECTIVES

9 Semester Hours

THESIS

4 Semester Hours

Total Minimum Semester Hours Required:

34

Communication Courses**COM 6121 Communication Management**

3 cr (3,0)

Analysis and development with reference to particular media. Organizational theory, structure and behavior. Management principles and operations.

COM 6303 Communication Research I

3 cr (3,0)

Analysis of theory and methodology in communication research, with emphasis on persuasion, nonverbal communication, and interpersonal communication.

COM 6304 Communication Research II

3 cr (3,0)

PR: Statistics and COM 6303. Planning and implementation of research in persuasion, nonverbal communication, and interpersonal communication.

MMC 6445 Mass Media Research I

3 cr (3,0)

An introduction to mass communication theories and to both applied and theoretical research in mass communication.

MMC 6446 Mass Media Research II

3 cr (3,0)

PR: Statistics and MMC 6445. Planning and implementation of mass media research.

MMC 6603 Communication and Society

3 cr (3,0)

The importance of the mass media, their structure, role, and problems.

MMC 6611 Effects of Advertising on Society

3 cr (3,0)

An in-depth study of advertising's effects on consumer behavior, societal mores and media economics.

MMC 6612 Communication and Government

3 cr (3,0)

A study of the relationship between the media and government.

SPC 5200 Evolution of Communication Theory

3 cr (3,0)

General Survey - major communication trends from classical era to the present. Comparison of Aristotelian and non-Aristotelian rhetorics. Contributions of principal figures will be discussed.

SPC 6219 Modern Communication Theory

3 cr (3,0)

Comparative analysis of theories and models of human communication, behavior systems, encoding and decoding processes, interaction variables, and social context.

SPC 6442 Small Group Communication

3 cr (3,0)

A study of communication and its effect on small group behavior.

COM 6908 Independent Study

1 - 3 cr

COM 6918 Research

1 - 3 cr

COM 6971 Thesis

4 cr (4,0)

COMPUTER SCIENCE

Ronald D. Dutton Graduate Program Coordinator
Office: CC II 206, Phone (407) 275-2341

R. C. Brigham, Ph.D.	Professor
N. Deo, Ph.D.	Millican Endowed Chair in Computer Science and Professor
R. D. Dutton, Ph.D.	Associate Chair and Professor
T. J. Frederick, Ph.D.	Chair and Professor
C. E. Hughes, Ph.D.	Professor
A. Mukherjee, Ph.D.	Professor
M. A. Bassiouni, Ph.D.	Associate Professor
L. K. Cottrell, Ph.D.	Associate Professor
J. R. Driscoll, Ph.D.	Associate Professor
H. C. Gerber, Ph.D.	Associate Professor
F. Gomez, Ph.D.	Associate Professor
R. K. Guha, Ph.D.	Associate Professor
S. D. Lang, Ph.D.	Associate Professor
J. Leeson, Ph.D.	Associate Professor
J. M. Moshell, Ph.D.	Associate Professor
A. Orooji, Ph.D.	Associate Professor
D. A. Workman, Ph.D.	Associate Professor
N. Chandrasekharan, Ph.D.	Assistant Professor
K. Hua, Ph.D.	Assistant Professor
M. A. Shah, Ph.D.	Assistant Professor
N. R. Vempaty, Ph.D.	Assistant Professor
U. Vemulapati, Ph.D.	Assistant Professor

Admission

Admission is based on satisfying the regular University requirements and department requirements. The minimum University requirements consist of the following:

- A baccalaureate degree from an accredited institution and an earned grade point average (GPA) of at least 3.0 in the last two years of undergraduate work or a combined score of 1000 or more on the quantitative-verbal sections of the General (Aptitude) Test of the Graduate Record Examination (GRE)
OR
- A previous graduate degree from an accredited institution.

The minimum department requirements are the following:

- Each student is required to submit a score on the Subject (Advanced) GRE in Computer Science that is not more than two years old at the time of admission to regular graduate status.
- An undergraduate degree in computer science is desirable, but not required. Applicants without a strong undergraduate background in computer science will be required to demonstrate an understanding of the material covered in the following courses:

CDA 4150	Introduction to Computer Architecture
COP 4710	Databases
COT 4500	Numerical Calculus
COP 4020	Programming Languages I
COP 4600	Programming Systems
COT 4210	Discrete Computational Structures

The student may choose to demonstrate the knowledge of these courses by scoring well on the Subject (Advanced) GRE in Computer Science. It is estimated that more than 85% of this GRE deals directly with the material covered in these courses.

- International students must obtain a minimum score of 550 on the TOEFL exam.

Admission to Ph.D. Program

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

*NOTE: Meeting minimum University admission standards for graduate status may not satisfy doctoral program admission requirements. Additional or higher criteria may be required.

Programs in Computer Science

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

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

The department houses the Center for Parallel Computation, directed by Dr. N. Deo, containing a BBN Butterfly 32 processor machine.

Master of Science Degree Requirements— Computer Science

REQUIRED COURSES

9 Semester Hours

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

a. CDA 5106	Advanced Computer Architecture I	3 hours
b. COT 5400	Design and Analysis of Algorithms	3 hours
c. COP 5611	Operating Systems Design Principles	
	or	
COP 5021	Programming Languages II	
	or	
COT 5310	Formal Languages and Automata Theory	3 hours

RESTRICTED ELECTIVES

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

Three options are available. The Research Survey option is a 36 hour program allowing at most 6 hours of independent study and requires that the student write a comprehensive literature survey paper, while enrolled in 3 hours of Research 6918, on a current topic of interest in Computer Science. The Research Project and Research Thesis options are both 30 hour programs exclusive of independent study. The research project normally entails the implementation and description of a substantial piece of software, while the thesis requires the analysis and description of a much more theoretical endeavor. These tasks are intended to span two semesters, and students are to enroll in 3 credits of 6918 research each semester.

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

- The plan of study must contain 30-36 semester hours depending upon the option selected.
- Grades received in these hours must be letter grades of A, B, or C with no more than 6 hours of C work and a grade point average of 3.0 or better.
- The plan of study can contain no courses below the 5000-level.
- The plan of study can contain no more than 6 hours (or two courses) of independent study in the Research Survey option and none in the other options.
- No course may be applied toward the degree which was completed more than 7 years prior to the date of graduation.
- Each student must also complete a research survey (exactly 3 credits), a research project or thesis (exactly 6 credits). The student must enroll for at least one hour of 6918 in the semester graduation is to occur.

SAMPLE PLANS OF STUDY

Student's plan of study can be designed to emphasize any of a number of areas within Computer Science. The following are some sample plans of study. They do not include all areas of emphasis nor are they fixed, but they are included here to show the flexibility of the Master of Science program.

VLSI Emphasis (Survey Option)

REQUIRED		9 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
COT 5400	Design & Analysis of Algorithms	3 hours
COP 5611	Operating Systems Design Principles	3 hours

ELECTIVES (6 hours at 6000-level)		24 Semester Hours
CDA 5210	Architecture and Design of VLSI	3 hours
CDA 5212	VLSI Design Tools	3 hours
CDA 5213	VLSI Testing and System Integration	3 hours
CDA 6211	VLSI Algorithms and Architecture	3 hours
CDA 6107	Advanced Computer Architecture II	3 hours
Other		9 hours

RESEARCH		3 Semester Hours
CDA 6918	Research	3 hours

Artificial Intelligence Emphasis (Survey Option)

REQUIRED		9 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
COT 5400	Design and Analysis of Algorithms	3 hours
COP 5021	Programming Languages II	3 hours

ELECTIVES		24 Semester Hours
CAP 5410	Computer Vision	3 hours
CAP 5601	Advanced Artificial Intelligence	3 hours
CAP 5610	Machine Learning	3 hours
CAP 6640	Computer Understanding of Natural Language	3 hours
CAP 6671	Intelligent Systems	3 hours
COT 5310	Formal Languages and Automata Theory	3 hours
CAP 6411	Computer Vision Systems	3 hours
OTHER		3 hours

RESEARCH		3 Semester Hours
CAP 6918	Research	3 hours

Software Tools Emphasis (Project Option)

REQUIRED		9 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
COT 6410	Computational Complexity	3 hours
COP 5021	Programming Languages II	3 hours

ELECTIVES		15 Semester Hours
COT 5400	Design and Analysis of Algorithms	3 hours
COT 6300	The Theory of Parsing and Translation	3 hours
COP 6621	Compiler Construction	3 hours
CIS 5610	Software Engineering	3 hours
COP 5570	Software Tools	3 hours

RESEARCH		6 Semester Hours
COP 6918	Research	6 hours

Parallel Computation Emphasis (Project Option)

REQUIRED		18 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
COT 5400	Design and Analysis of Algorithms	3 hours
CDA 5110	Parallel Architecture and Algorithms	3 hours
COT 6410	Computational Complexity	3 hours
COT 6415	Complexity of Parallel Computation	3 hours
COT 5310	Formal Languages and Automata Theory	3 Hours

ELECTIVES		6 Semester Hours
CDA 6107	Advanced Computer Architecture II	3 hours
CDA 6520	Computer Networks Design and Distributive Processing	3 hours

RESEARCH		6 Semester Hours
CDA 6918	Research	6 hours

Doctor of Philosophy Degree Requirements— Computer Science

PH.D. QUALIFYING EXAMINATION

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

The Ph.D. Qualifying Examination will be administered in two phases:

Phase I (Written Exam)

Phase I of the Qualifying Examination consists of a written examination in the following three areas:

1. Architecture: CDA 5106 Advanced Computer Architecture
2. Languages: COT 5310 Formal Languages and Automata Theory
3. Theory: COT 5400 Design and Analysis of Algorithms

This phase will be offered twice per year in September and January, and each student will be allowed at most two attempts, in two consecutive offerings, to pass this phase.

Phase II (Committee Exam)

Upon successful completion of Phase I, the student must identify an area of study for his Ph.D. research and an advisory committee chaired by a Computer Science graduate faculty member. A tentative plan of study approved by the student's advisory committee should be filed. The advisory committee will then examine the student to ascertain the student's ability to conduct independent research. This examination will be a narrowly focused examination in and around the area of the student's specialty. The format and length of the examination will be determined by the student's committee (e.g., may be oral and/or written and may involve surveying literature and submitting critical reviews of

selected research articles). Each student will be allowed at most two attempts to pass Phase II. However, the student is expected to pass Phase II within no more than one year from passing Phase I.

Upon successful completion of the Qualifying Examination, the student will be admitted to the Ph.D. program.

PLAN OF STUDY

The plan of study will consist of a minimum of seventy-two (72) semester hours of graduate credit, including a minimum of twenty-four (24) semester hours of advanced (6000-level) graduate courses with a special emphasis on the doctoral area of specialization and an adequate treatment of other major areas of computer science and related disciplines. The plan must include six (6) hours of graduate work outside of computer science and eighteen (18) hours of additional 5000- or 6000-level approved graduate courses containing at least nine (9) semester hours of courses exclusive of independent study taught by the Computer Science department.

The plan of study must include a minimum of fifteen (15) semester hours of Ph.D. research credits.

RESEARCH COMMITTEE

The formation of a research committee should occur as soon as the student has identified a potential research area. This committee will consist of no more than five faculty members, three of whom must be Computer Science graduate faculty and at least one of whom must be from outside the College of Arts and Sciences.

CANDIDACY EXAMINATION

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

RESIDENCE REQUIREMENT

Students in the Ph.D. program are normally expected to be full-time students. Students must spend at least two consecutive semesters as a full-time student at UCF (that is, registered for a minimum of nine hours each of the two terms). At least one of the semesters used for the residency requirement must occur while the student holds candidacy status.

TIME LIMITATION

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

SPECIAL DEGREE REQUIREMENTS

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

DISSERTATION AND ORAL DEFENSE

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

Computer Science Courses

CAP 5410 Computer Vision

3 cr (3,0)

PR: COP 3530. Image formation, binary vision, region growing and edge detection, shape representation, dynamic scene analysis, texture, stereo and range images, and knowledge representation.

CAP 5635 Artificial Intelligence and Prolog

3 cr (3,0)

PR: CAP 4630. Analysis of deductive databases, applications of logic programming to knowledge representation and "expert systems."

CAP 5636 Advanced Artificial Intelligence

3 cr (3,0)

PR: CAP 4630. AI theory of knowledge representation, "expert systems," memory organization, problem solving, learning, planning, vision and natural language.

CAP 5610 Machine Learning

3 cr (3,0)

PR: CAP 4630 or C.I. Origin/evaluation of machine intelligence; machine learning concepts and their applications in problem solving, planning and expert systems; symbolic role of humans and computers.

CAP 5725 Computer Graphics Systems I

3 cr (3,0)

PR: COP 3530. Architecture of graphics processors; display hardware; principles of programming and display software; problems and applications of graphic systems.

CAP 6411 Computer Vision Systems

3 cr (3,0)

PR: CAP 5410. Perceptual organization, geometric reasoning, knowledge and model representations, interpretations; Acrony, Visions, Consight, 3PPO, ANGY, ALVEN.

CAP 6412 Advanced Computer Vision

3 cr (3,0)

PR: CAP 5410. Computational theories of perception, shape from 'X' techniques, multi-resolution image analysis, 3-D model based vision, perceptual organization, spatio-temporal model, knowledge based vision systems.

CAP 6640 Computer Understanding of Natural Language

3 cr (3,0)

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 Intelligent Systems

3 cr (3,0)

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 6701 Computer Graphic Systems II

3 cr (3,0)

PR: CAP 5725. Modeling design and analysis of graphics systems; data structures, numerical techniques, algorithms and optimum seeking methods for various problems in computer graphics.

CDA 5106 Advanced Computer Architecture I

3 cr (3,0)

PR: CDA 4150. Evolution of computer architecture; memory organization; cache; virtual memory; high speed processor design; pipeline multi-functional and array machines; special architecture case studies; overview of channel architecture.

CDA 5110 Parallel Architecture & Algorithms

3 cr (3,0)

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

CDA 5210 Architecture and Design of VLSI

3 cr (3,0)

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 5212 VLSI Design Tools

3 cr (3,0)

PR: CDA 5210, a strong programming background and C.I. VLSI implementation systems; layout languages; tools; graphic tools; sticks compactor; design rule checking algorithms; simulation models; tools; routing algorithms; silicon compilers; knowledge-based VLSI tools.

CDA 5213 VLSI Testing and System Integration

3 cr (3,0)

PR: CDA 5210. Test vectors; fault models; design for testability; LSSD; languages for testing; performance measurements; interrupts; bus concepts and standards; testing and systems integration.

CDA 6107 Advanced Computer Architecture II

3 cr (3,0)

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

- CDA 6108 Selected Topics in Computer Architecture** 3 cr (3,0)
PR: CDA 5106. Selected research papers on multiprocessors, data base machines, virtual machines, ultracomputer, connection machine, MPP, Butterfly flow architectures, object-based architectures, fault-tolerant architectures.
- CDA 6211 VLSI Algorithms and Architecture** 3 cr (3,0)
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 6501 Computer Communications Networks Architecture** 3 cr (3,0)
PR: CDA 5106. Introduction to networking; architecture of circuit, message and packet switching networks; local computer networks architecture; modems, protocols.
- CDA 6520 Computer Networks Design and Distributive Processing** 3 cr (3,0)
PR: CDA 6501 and COP 5611. Computer communications networks design considerations, network operating system, distributive processing.
- CGS 5310 Computer Based Educational Systems** 3 cr (3,0)
PR: COP 4020 or equivalent. The design and implementation of computer based educational systems. Selected projects using high-level programming languages.
- CIS 5101 Computational Techniques in Management Information Systems** 3 cr (3,0)
PR: CIS 4710. The role of computers in management information systems; analysis, design approaches, processing methods and data management; use of state-of-the-art software in design and development.
- CIS 5610 Software Engineering** 3 cr (3,0)
PR: COP 4020. Knowledge of ADA. Study of design techniques for large software systems, modularization, task assignment, management techniques, implementation techniques, testing, quality control, documentation and maintenance.
- COP 5021 Programming Languages II** 3 cr (3,0)
PR: COP 4020 and COT 4210. Introduction to compiler construction, parsing, parser generators, attributed grammars and the implementation of block structures and recursion. Students write a high-level language translator.
- COP 5570 Software Tools** 3 cr (3,0)
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 Operating Systems Design Principles** 3 cr (3,0)
PR: COP 4600. Structure and functions of operating systems, process communication techniques, high-level concurrent programming, virtual memory systems, elementary queueing theory, security, distributed systems, case studies.
- COP 5711 Principles of Data Base Systems** 3 cr (3,0)
PR: COP 4710. Physical data organizations, popular data base systems, data models, reorganization, security, recovery, concurrency, distributed data bases, data base machines.
- COP 6614 Operating Systems Techniques** 3 cr (3,0)
PR: COP 5611. Techniques in the design and implementation of operating systems. Case studies of several experimental and commercial operating systems.
- COP 6615 Operating Systems Theory** 3 cr (3,0)
PR: COP 5611. Scheduling and queueing theory, simulation, and performance evaluation of computer systems.
- COP 6621 Compiler Construction** 3 cr (3,0)
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 Data Base System Techniques** 3 cr (3,0)
Recent and/or more advanced developments in data base systems (e.g., recovery protocols, concurrency control schemes, query processing techniques, user interfaces, expert data base systems.)
- COP 6731 Data Base System Theory** 3 cr (3,0)
PR: COP 5711. Theoretic aspects of data bases (e.g., relational data theory, security models, data models, performance optimization.)
- COT 5310 Formal Languages and Automata Theory** 3 cr (3,0)
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 5400 Design and Analysis of Algorithms**3 cr (3,0)**

PR: COT 4210 and COT 4400. Classifications of algorithms, e.g., recursive, divide-and-conquer, greedy, etc. Data structures and algorithm design and performance. Time and space complexity analysis.

COT 6410 Computational Complexity**3 cr (3,0)**

PR: COT 5400. 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 5501 Computational Methods/Applications**3 cr (3,0)**

PR: CNM 4500. Computational solution techniques for algebraic equations, ODE and PDE models of applications selected from science, engineering, applied mathematics and computer science.

COT 5515 Computational Methods/Linear Systems**3 cr (3,0)**

PR: CNM 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 6300 The Theory of Parsing and Translation**3 cr (3,0)**

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 6415 Complexity of Parallel Computation**3 cr (3,0)**

PR: CDA 5110, COT 5410. 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 Computational Methods/Analysis I**3 cr (3,0)**

PR: COT 5515. Analysis of direct and iterative solutions of systems of linear equations, eigenvalues and vectors and roots of nonlinear equations, error analysis.

COT 6506 Computational Methods/Analysis II**3 cr (3,0)**

PR: COT 6505. Analysis of numerical methods for approximation, integration and solution of ordinary differential equations. Lagrange polynomials, splines, Gaussian quadrature, Fourier series. Stability and illconditioning. Error analysis.

CAP, CDA, CIS, COP or COT prefixes are used for the following:**6918 Research****3 credits****7919 Doctoral Research****7980 Doctoral Dissertation**

ENGLISH

Beth Barnes Graduate Program Coordinator
Office: HFA 433, Phone (407) 823-2212

R. R. Adicks, Ph.D.	Professor
R. Astro, Ph.D.	Provost and Professor
S. E. Omans, Ph.D.	Professor
J. F. Schell, Ph.D.	Chair and Professor
G. J. Schifffhorst, Ph.D.	Professor
R. E. Umphrey, Ph.D.	Professor
W. Wyatt	Professor
B. Barnes, Ph.D.	Associate Professor
K. L. Bell, Ph.D.	Associate Professor
J. J. Donnelly, Ph.D.	Associate Professor
J. Hemschemeyer	Associate Professor
D. R. Jones, Ph.D.	Associate Professor
P. J. Rushin	Associate Professor
K. L. Seidel, Ph.D.	Associate Dean and Associate Professor
M. E. Sommer, Ed.D.	Associate Professor
D. L. Stap, Ph.D.	Associate Professor
P. D. Deane, Ph.D.	Assistant Professor
K. Z. Keller, Ph.D.	Assistant Professor

Admission

Minimum requirements for admission are a grade point average (GPA) of 3.0 for the last 60 semester credit hours earned as an undergraduate and a total score of 1000 on the aptitude section of the Graduate Record Examination (GRE). International students must score at least 575 on the Test of English as a Foreign Language (TOEFL).

Other criteria for admission are a baccalaureate degree in English or its equivalent, at least a year's study of a foreign language, and approval by the Graduate Committee of the Department of English. Students are expected to have read widely in British and American literature, to be highly competent in writing, and to be familiar with the vocabularies of literary criticism and grammar.

An applicant for the concentration in creative writing should submit a portfolio of poetry, drama, or fiction.

A student with a baccalaureate degree in a subject other than English may qualify for Graduate status by presenting a score of at least 540 on the Advanced GRE Test in Literature or completing survey courses in British and American Literature.

Applicants are urged to apply for the program and take the GRE before April 1 for the subsequent fall term and before November 1 for the spring term.

Master of Arts Degree Requirements—

English/Literature:

Each student must complete at least 33 hours, including one course in linguistics and five core courses. Near the end of the degree program, each candidate will write a comprehensive examination based on a prescribed reading list and a) write a thesis or b) take an oral examination on a specific area of literature.

REQUIRED COURSES

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

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

ELECTIVES

12 Hours

COMPREHENSIVE EXAMINATION**SPECIALIZATION — Choose A or B**

3 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 enroll at least once in LIT 6971, Thesis, for three hours of credit.

B. EXTENDED RESEARCH AND ORAL EXAMINATION OPTION:

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

TOTAL MINIMUM HOURS

33 hours

English/Creative Writing:

Each student must complete at least 33 hours, including six hours of writing workshops. Near the end of the degree program, each candidate will write a comprehensive examination based on a prescribed reading list and will write a creative thesis.

REQUIRED COURSES

12 Semester Hours

CRW 5004	Graduate Writing Workshop	3 hours
CRW 6009	Advanced Writing Workshop	3 hours
LIT 5097	Studies in Contemporary Fiction	3 hours
LIT 5039	Studies in Contemporary Poetry	3 hours

RESTRICTED ELECTIVES

9 Semester Hours

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

OPEN ELECTIVES:

(selected with assistance of advisor)

9 Semester Hours

COMPREHENSIVE EXAMINATION**THESIS:**

3 hours

The candidate will complete a book-length manuscript (fiction, poetry, or other genre) of publishable quality, written and revised in CRW 6971 Thesis (3 hours). The manuscript will be submitted for review and approval by the graduate creative writing faculty.

TOTAL MINIMUM HOURS

33 hours

English Courses**CRW 5004 Graduate Writers' Workshop**

3 cr (3,0)

Student writers present their own work, receiving detailed analysis of its strengths and weaknesses from their fellow writers and from the teacher.

CRW 6009 Graduate Writing Workshop

3 cr (3,0)

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.

CRW 5932 Teaching Creative Writing

3 cr (2,1)

Creative writing practicum. May be repeated for credit.

ENG 5009 Graduate Research in English

3 cr

A study of the aims and methods of literary scholarship and research.

- ENG 5018 Literary Criticism** 3 cr (3,0)
Historical survey of major critics from classical antiquity to the modern era.
- ENG 5028 Rhetoric and Literature** 3 cr (3,0)
Investigates the development of written strategies of persuasion. Traces their relation to practical and imaginative literature. Applications to classroom teaching of literature and composition.
- ENL 5226 English Renaissance Poetry and Prose** 3 cr (3,0)
PR: Senior standing or C.I. The course will examine selected poetry and prose of Wyatt, Surrey, Sidney, Spenser, Marlowe, Raleigh, Daniel, Shakespeare, Chapman, Lyly, and others.
- ENL 5335 Studies in Shakespeare** 3 cr (3,0)
Representative plays with emphasis on Shakespeare's development as an artist: aesthetics of dramatic literature.
- ENL 5347 The Age of Milton** 3 cr (3,0)
Emphasis on the non-dramatic works of John Milton. Selections from the non-dramatic works of other 17th Century figures.
- ENL 5356 Eighteenth Century Studies** 3 cr (3,0)
Reading, analysis and discussion of literature in English: 1660-1800.
- LAE 5367 English Composition and Literature for Teachers of Advanced Placement** 3 cr (3,0)
PR: Graduate standing and C.I. A two-week summer institute for secondary school teachers preparing to teach Advanced Placement courses.
- LAE 5372 Theory and Practice in Composition** 3 cr (2,1)
PR: Senior standing or C.I. Intensive study of theories of composition, with practical experience in the writing laboratory and in composition classes.
- LAE 6375 Practicum: The Teaching of Composition** 3 cr (3,0)
Close work with an experienced instructor in teaching an undergraduate composition course, combined with regular group meetings for discussion of problems of teaching composition.
- LIN 5137 Linguistics** 3 cr (3,0)
Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.
- LIN 5805 Language and Meaning** 3 cr (3,0)
An examination of how language conveys meaning and the implications about the nature and structure of the mind.
- LIN 6932 Problems in Linguistics** 3 cr (3,0)
PR: LIN 5137. Study of the application of linguistics to various aspects of teaching and communication.
- LIT 5039 Studies in Contemporary Poetry** 3 cr (3,0)
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 Studies in Contemporary Fiction** 3 cr (3,0)
Fiction in the last 20 years in the United States and Britain. May be repeated for credit.
- LIT 5309 Media and Popular Literature** 3 cr (3,0)
PR: Senior standing or C.I. Study of the literary content of contemporary media and of popular fiction. Application to classroom teaching.
- LIT 5366 The Romantic Revolt (19th Century Literature)** 3 cr (3,0)
The romantic revolt in poetry and prose; English, American, and Continental literature, 1798-1832.
- LIT 5367 The Victorian Age** 3 cr (3,0)
PR: Senior standing or C.I. Study of poets and essayists from 1837 to 1900, including Tennyson, the Brownings, Arnold, Hopkins, Carlyle, and Mill; emphasizing Dickens, George Eliot, the Brontës, and Hardy and other novelists.
- LIT 6009 Literary Genres** 3 cr (3,0)
PR: Graduate standing. Provenance, structure and critical problems in a specific genre such as tragedy, the epic, the novel, or the lyric. May be repeated for credit when content is different.

LIT 6105 World Literature**3 cr (3,0)**

PR: Graduate standing. Study of the influence on British and American literature of selected foreign works read in translation. May be repeated for credit when content is different.

LIT 6365 Movements in Literature**3 cr (3,0)**

PR: Graduate standing. Study of a movement such as naturalism, romanticism, or classicism, or of a literary period such as the Baroque or the Southern Renaissance. May be repeated for credit when content is different.

LIT 6506 Major Authors**3 cr (3,0)**

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.

HISTORY

Edmund F. Kallina, Jr. Graduate Program Coordinator

Office: HFA 505A, Phone (407) 275-2224

T. Colbourn, Ph.D. Professor

R. C. Crepeau, Ph.D. Chair and Professor

J. B. Fernandez, Ph.D. Professor

B. F. Pauley, Ph.D. Professor

J. H. Shofner, Ph.D. Professor

P. W. Wehr, Ph.D. Professor

J. L. Evans, Ph.D. Associate Professor

E. B. Fetscher, Ph.D. Associate Professor

E. F. Kallina, Jr., Ph.D. Associate Professor

S. A. Leckie, Ph.D. Associate Professor

T. D. Greenhaw, Ph.D. Assistant Professor

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission to the program are a grade point average (GPA) of 3.0 for the last 60 semester hours of undergraduate study and a score of at least 500 on the verbal section of the General (Aptitude) test of the Graduate Record Examination (GRE).

Program in History

The Master of Arts in History is aimed at providing for the academic growth of secondary school teachers, preparing students for Ph.D. work, and providing graduate courses for individuals who wish to enrich their intellectual lives. Departmental areas of research include American cultural and social history, local history, the American frontier, twentieth-century mass movements, and Nazism and anti-Semitism in Central Europe, as well as many other areas.

**Master of Arts Degree Requirements—
History**

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

HIS 6159	Historiography	3 hours
HIS 6971	Thesis	6-9 hours
Area of Concentration (American or European)		18 hours
Outside Area of Concentration in History		6-9 hours
Electives		0-3 hours

Students will also be expected to demonstrate a reading competence in one foreign language or to display a proficiency in quantitative methods by completing successfully the following courses (The statistical option is available **only** to those in American history.):

- (1) STA 3023: Statistical Methods.
- (2) STA 5206: Statistical Analysis
- (3) STA 5505: Categorical Data Methods or
STA 6226: Sampling Theory and Applications

EXAMINATION REQUIREMENTS

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

History Courses

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

AMH 5116 Colloquium in U.S. Colonial History	3 cr (3,0)
AMH 5137 Colloquium in U.S. Revolutionary Period	3 cr (3,0)
AMH 5149 Colloquium in Early U.S. History, 1789-1815	3 cr (3,0)
AMH 5169 Colloquium in the Age of Jackson	3 cr (3,0)
AMH 5176 Colloquium in Civil War and Reconstruction	3 cr (3,0)
AMH 5219 Colloquium in Late 19th Century U.S.	3 cr (3,0)
AMH 5296 Colloquium in 20th Century U.S.	3 cr (3,0)
AMH 5391 Colloquium in U.S. Cultural History	3 cr (3,0)
AMH 5407 Colloquium in the American South	3 cr (3,0)
AMH 5446 Colloquium in U.S. Frontier	3 cr (3,0)
AMH 5508 Colloquium in Women in American History.	
AMH 5515 Colloquium in U.S. Diplomatic History	3 cr (3,0)
AMH 6939 Seminar in U.S. History May be repeated for credit when content is different.	3 cr (3,0)
EUH 5237 Colloquium in Europe from 1815-1848	3 cr (3,0)
EUH 5238 Colloquium in Europe from 1848-1914	3 cr (3,0)
EUH 5247 Colloquium in Europe from 1919-1939	3 cr (3,0)
EUH 5285 Colloquium in Europe Since World War II	3 cr (3,0)
EUH 5371 Colloquium in Spanish History	3 cr (3,0)
EUH 5517 Colloquium: Tudor-Stuart England	3 cr (3,0)
EUH 5527 Colloquium in 18th Century England	3 cr (3,0)
EUH 5579 Colloquium in Soviet Russia	3 cr (3,0)
EUH 5595 Colloquium in Czarist Russia	3 cr (3,0)
EUH 5608 Colloquium in European Intellectual History	3 cr (3,0)
EUH 6939 Seminar in European History May be repeated for credit when content is different.	3 cr (3,0)

HIS 6159 Historiography	3 cr (3,0)
Selected topics in the study of history. May be repeated for credit on consent of instructor.	
HIS 6946 Teaching Practicum	3 cr (3,0)
Student observation, participation, direction, and leadership in a college survey course.	
HIS 6971 Thesis	1-6 cr (1-6,0)
LAH 5713 Colloquium in U.S.-Latin American Relations	3 cr (3,0)
LAH 6938 Seminar in Latin American History	3 cr (3,0)
May be repeated for credit when content is different.	

MATHEMATICAL SCIENCE

Larry C. Andrews Graduate Program Coordinator
Office: PH 403D, Phone (407) 823-6284

L. C. Andrews, Ph.D.	Professor
R. C. Brigham, Ph.D.	Professor
L. Debnath, Ph.D.	Chair and Professor
R. N. Mohapatra, Ph.D.	Professor
A. J. Pettofrezzo, Ph.D.	Professor
G. D. Richardson, Ph.D.	Professor
H. Sherwood, Ph.D.	Professor
B. K. Shivamoggi, Ph.D.	Professor
M. D. Taylor, Ph.D.	Professor
A. I. Zayed, Ph.D.	Professor
J. M. Anthony, Ph.D.	Associate Professor
L. H. Armstrong, Ph.D.	Associate Professor
M. N. Heinzer, Ph.D.	Associate Professor
P. Mikusinski, Ph.D.	Associate Professor
E. Norman, Ph.D.	Associate Professor
C. P. Rautenstrauch, Ph.D.	Associate Professor
R. Rodriguez, Ph.D.	Associate Professor
K. Vajravelu, Ph.D.	Associate Professor
R. M. Caron, Ph.D.	Assistant Professor
S. R. Choudhury, Ph.D.	Assistant Professor
J. W. Hurst	Assistant Professor
R. C. Jones, Ph.D.	Assistant Professor
X. Li, Ph.D.	Assistant Professor
D. K. Rollins, Ph.D.	Assistant Professor
F. Salzmman, Ph.D.	Assistant Professor

Joint Appointee:

D. Nicholson, Ph.D.	Professor of Engineering
R. L. Phillips, Ph.D.	Professor of Engineering

Several faculty members are active in mathematics research, some of which is supported by external grants.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Admission requirements are the standard University criteria of a 3.0 grade point average (GPA) for the last 60 semester hours of credit earned towards the baccalaureate or a GRE score of at least 1000 for the combined verbal-quantitative sections of the General (Aptitude) Test. The GRE must be less than 5 years old.

Additionally, students entering the graduate program with regular status are assumed to have a working knowledge in such areas as calculus, differential equations, linear algebra (or matrix theory), boundary value problems, with statistics and computer programming at the undergraduate level. Those students who find they are not adequately prepared in one

or more of these areas can select appropriate courses from the undergraduate curriculum to make up such deficiencies. Applicants not qualified for regular status may be initially admitted to the University in a post-baccalaureate status.

Program in Mathematical Science

The Master of Science degree program in Mathematical Science is an interdisciplinary program intended to provide a broad base in applied mathematics, mathematical statistics, and computational mathematics. The program is available in the evening hours to accommodate the working student.

Master of Science Degree Requirements

The Mathematical Science degree requires a total of 30 credit hours, with a minimum of 24 hours of course work.

REQUIRED COURSES:

24 Semester Hours

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

Suggested mathematics courses:

MAA 5210	Topics in Advanced Calculus	4 hours
MAP 5405	Complex Variables	3 hours
MAP 5407	Applied Mathematics I	3 hours
MAP 6408	Applied Mathematics II	3 hours
MAS 6237	Mathematical Statistics	3 hours
MAS 6238	Introduction to Measure and Probability	3 hours

Suggested computer science courses (See Computer Science Department):

COT 6505	Computational Methods/Analysis	3 hours
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RESTRICTED ELECTIVES

1-4 Semester Hours

Electives may be chosen from approved mathematics, statistics or computer science courses. Other graduate courses outside these departments may also be used if approved by the student's committee.

THESIS OR RESEARCH REPORT

2-6 Semester Hours

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

An oral defense of the thesis or research report will be required.

EXAMINATION REQUIREMENTS

A final examination for either option may be given at the discretion of the student's committee.

Total Minimum Semester Hours Required: 30

Mathematical Science Courses

MAA 5210 Topics in Advanced Calculus

4 cr (4,0)

PR: MAC 3313 or C.I. Selected topics in multivariable calculus including limits, continuity, Euler's theorem, the Jacobian, and double series; extension of single variable concepts including uniform convergence and improper integrals.

MAA 6105 Hilbert Spaces with Applications

3 cr (3,0)

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 Combinatorics and Graph Theory II** 3 cr (3,0)
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 Advanced Graph Theory I** 3 cr (3,0)
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 Computer Science.
- MAP 5396 Splines and Data Fitting** 3 cr (3,0)
PR: MAP 3302, MAS 3105 or 3106, or C.I. Topics on univariate splines and data fitting; applications to regression analysis, differential and integral equations; algorithms for different types of splines.
- MAP 5405 Complex Variables** 3 cr (3,0)
PR: MAC 3313 or C.I. Analytic functions; integration in the complex plane; Laurent series and residue calculus, inversion of Laplace transforms; conformal mappings; application in engineering and the physical sciences.
- MAP 5407 Applied Mathematics I** 3 cr (3,0)
PR: MAP 3302 or C.I. Calculus of variations, Hamilton's principle, eigenvalues and stationary points, Rayleigh-Ritz method, differential equations, and approximation methods.
- MAP 5426 Special Functions** 3 cr (3,0)
PR: MAP 3302 or C.I. Series and integral representations, generating functions, recurrence relations and orthogonality properties of the special functions. Emphasis on Bessel, Legendre, and hypergeometric functions.
- MAP 6104 Introduction to Nonlinear Dynamics** 3 cr (3,0)
PR: MAP 3302, PHY 3048 or equivalent, or C.I. Nonlinear differential equations; bifurcation theory; Hamiltonian dynamics; integrable systems and breakdown of integrability; chaos in conservative and dissipative systems.
- MAP 6356 Partial Differential Equations** 3 cr (3,0)
PR: MAP 3302 or C.I. First and second order linear equations; classification and analytical methods of solution; Green's functions and integral representations; applications in engineering and physical sciences.
- MAP 6408 Applied Mathematics II** 3 cr (3,0)
PR: MAP 5407, MAA 5210 or C.I. Linear vector spaces and linear operators, eigenvalue problems in Hilbert space, Fourier series, integral equations, partial differential equations and orthogonal functions.
- MAP 6424 Transform Methods** 3 cr (3,0)
PR: MAA 5405 or C.I. Laplace, Fourier, Hankel and other integral transforms, inversion theorems; the Z transform; applications to physical problems.
- MAP 6445 Approximation Techniques** 3 cr (3,0)
PR: MAA 4228 or MAA 5211 or C.I. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.
- MAS 5115 Matrix Theory and Its Applications** 3 cr (3,0)
PR: MAS 3113, STA 4322. Basic theory of determinants, inverses, generalized inverses, eigenvalues and eigenvectors; partitioned matrices; diagonalization and decomposition theorems; least squares; and applications.
- MAP 6971 Thesis** 2-6 cr
- MAS 6237 Mathematical Statistics** 3 cr (3,0)
PR: MAS 6238 (Measure & Probability) or consent of instructor. Strong laws of large numbers, consistency and asymptotic normality, complete and sufficient statistics, maximum likelihood and least squares, optimal estimators, hypothesis testing.
- MAS 6238 Measure and Probability** 3 cr (3,0)
PR: MAA 5210 or C.I. Measure and integration, probability measures, random variables, distribution and characteristic functions. Convergence in L^p , probability, distribution and with probability one.
- MAS 6239 Asymptotic Methods in Mathematical Statistics** 3 cr (3,0)
PR: MAS 66237 (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.

MUSIC

Edward R. Hoteling Acting Chair
Office: FA 105A, Phone (407) 275-2869

Music Courses

MUT 5325 Arranging and Composing Music	3 cr (3,0)
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 Trumpet V*	2 cr (1,0)
MVB 5452 French Horn V*	2 cr (1,0)
MVB 5453 Trombone V*	2 cr (1,0)
MVB 5454 Baritone V*	2 cr (1,0)
MVB 5455 Tuba V*	2 cr (1,0)
MVK 5451 Piano V*	2 cr (1,0)
MVK 5453 Organ V*	2 cr (1,0)
MVO 5250 Advanced Secondary Instruction	1 cr (1,0)
PR: Graduate standing and C.I. Advanced instructional techniques on a secondary instrument or in voice. May be repeated for credit.	
MVP 5451 Percussion V*	2 cr (1,0)
MVS 5451 Violin V*	2 cr (1,0)
MVS 5452 Viola V*	2 cr (1,0)
MVS 5453 Cello V*	2 cr (1,0)
MVS 5454 Bass V*	2 cr (1,0)
MVS 5455 Harp V*	2 cr (1,0)
MVS 5456 Guitar V*	2 cr (1,0)
MVV 5451 Voice V*	2 cr (1,0)
MVW 5451 Flute V*	2 cr (1,0)
MVW 5452 Oboe V*	2 cr (1,0)
MVW 5453 Clarinet V*	2 cr (1,0)
MVW 5454 Bassoon V*	2 cr (1,0)
MVW 5455 Saxophone V*	2 cr (1,0)

*PR: C.I. required for these courses.

PHYSICS

H. P. Saha Graduate Program Coordinator
Office: HPB 310, Phone (407) 823-2325

J. R. Bolte, Ph.D. Vice President of Administration and Finance
and Professor

S. K. Bose, Ph.D. Chair and Professor

J. J. Brennan, Ph.D. Professor

B. Chai, Ph.D. Professor

L. Elias, Ph.D. Professor

J. J. Kim, Ph.D. Professor

R. A. Llewellyn, Ph.D. Professor

A. Miller, Ph.D. Professor

J. E. Neighbor, Ph.D. Associate Vice President for
Academic Affairs and Professor

M. C. Richardson, Ph.D. Professor

W. Silfvast, Ph.D. Professor

G. Stegeman, Ph.D. Cobb-Hooker Eminent Scholar
Chair of Optical and Laser
Sciences and Engineering

E. W. Van Stryland, Ph.D. Professor

J. S. Bolemon, Ph.D. Associate Professor

C. D. Caldwell, Ph.D. Associate Professor

L. Chow, Ph.D. Associate Professor

D. J. Hagan, Ph.D. Associate Professor

H. P. Saha, Ph.D. Associate Professor

O. G. Heinonen, Ph.D. Assistant Professor

M. D. Johnson, Ph.D. Assistant Professor

R. E. Peale Assistant Professor

R. L. Renken Assistant Professor

A. Schulte, Ph.D. Assistant Professor

I. M. Littlewood, Ph.D. Assistant Professor

I. Kimel, Ph.D. Adjunct Professor

N. Ying, Ph.D. Adjunct Professor

Joint Appointees:

M. Bass, Ph.D. Vice President for Research
and Professor of Electrical Engineering

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

K. H. Guenther, Ph.D. Associate Professor of Electrical Engineering

K. Beck Assistant Professor of Chemistry

Admission

The Graduate Record Examination (GRE) is required of all applicants. Minimum requirements in order to be considered for admission to the graduate program in Physics are the standard University criteria of a 3.0 (A=4) grade point average (GPA) for the last 60 semester hours of credit earned towards the baccalaureate or a GRE score of at least 1000 on the combined verbal-quantitative sections of the General (Aptitude) Test. 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 expected to have completed course work generally required for a Bachelor's Degree in Physics, including mechanics, electricity and magnetism, thermodynamics and quantum mechanics. The admission deadline for the fall semester of each academic year is usually February 15 of the preceding spring, although exceptions may be granted.

Program in Physics

The Department of Physics offers a Master of Science degree and a Doctor of Philosophy degree. Research opportunities are available in optics, laser physics, electro-optics, atomic and molecular physics, condensed matter physics, biophysics, particle physics, and chemical physics. Many opportunities exist to interact with local high technology industries. Research for a physics degree can also be conducted within the Center for Research in Electro-Optics and Lasers (CREOL).

Master of Science Degree Requirements—Physics

The Master of Science in Physics degree requires a total of 33 semester credit hours, with a minimum of 27 hours of course work and 6 hours of thesis. The course work is divided into core requirements (15 hours) and electives (12 hours). All electives must be approved by the student's advisory committee.

Core Courses

15 Hours

PHY	6246	Classical Mechanics	3 hours
PHY	5524	Statistical Physics	3 hours
PHY	5346	Electrodynamics I	3 hours
PHY	5606	Quantum Mechanics I	3 hours
PHY	6624	Quantum Mechanics II	3 hours

Electives

12 Hours

A minimum of 3 semester hours must be selected from the following:

PHY	5446	Laser Principles	3 hours
PHZ	5405	Condensed Matter Physics	3 hours
PHZ	5304	Nuclear Physics	3 hours
PHZ	5505	Plasma Physics	3 hours
PHY	6347	Electrodynamics II	3 hours

Courses for teachers do not satisfy elective requirements for the Master's Degree in Physics.

THESIS

6 Hours

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

Total Minimum Semester Hours Required: 33

Doctor of Philosophy Degree Requirements—Physics

The total program consists of 72 hours, of which 15 are required dissertation hours (PHY 7980). The remaining hours are divided into 18 hours of core courses, 12 hours of approved course electives, and 27 hours which may be any combination of research and approved course work. The electives 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/Lecture program.

Core Courses

PHY	6246	Classical Mechanics	3 hours
PHY	5524	Statistical Physics	3 hours
PHY	5346	Electrodynamics I	3 hours
PHY	6347	Electrodynamics II	3 hours
PHY	5606	Quantum Mechanics I	3 hours
PHY	6624	Quantum Mechanics II	3 hours

Elective Courses

PHZ	6115	Theoretical Methods	3 hours
PHY	5446	Laser Principles	3 hours
PHY	6447	Laser Physics	3 hours
PHY	6448	Specific Laser Systems	3 hours
PHY	6434	Non-linear Optics	3 hours
PHZ	5405	Condensed Matter Physics	3 hours
PHZ	6425	Advanced Condensed Matter Physics	3 hours
PHY	5431	Optical Properties of Materials I	3 hours
PHZ	6424	Optical Properties of Solids	3 hours
PHY	6667	Advanced Quantum Mechanics	3 hours
PHZ	6204	Atomic and Molecular Spectroscopy	3 hours
PHZ	6156	Advanced Computational Physics	3 hours
PHY	6353	Accelerator Physics	3 hours
PHY	6355	Physics of Free Electrons	3 hours
PHY	6918	Directed Research	3 hours
PHY	6938	Special Topics/Seminars	3 hours
PHZ	5304	Nuclear Physics	3 hours
PHZ	5505	Plasma Physics	3 hours
PHZ	6234	Atomic Physics	3 hours

Courses for teachers do not satisfy elective requirements for the Ph.D. degree in physics.

QUALIFYING EXAMINATION

Admission into Doctoral Status is contingent upon passing a Qualifying Examination consisting of both written and oral portions which covers all material included in the Core Courses and undergraduate preparation in physics. Typically, students sit for this exam after having completed three semesters of graduate study. The exam may be attempted no more than twice. A student failing at the second attempt may continue toward a Master's Degree.

CANDIDACY EXAMINATION

This is an examination which covers the course work and general knowledge in that specialty area in which the student has begun research. This examination will be administered by the student's research advisor and the dissertation committee. The graded results of this examination will go on file in the Office of the Dean.

DISSERTATION PROPOSAL

In conjunction with the candidacy examination, a student in the program will write a dissertation proposal describing the dissertation topic to be chosen by the candidate, followed by an oral examination covering the details of the student's research project. The examination will be administered by the student's research advisor and the dissertation committee. After passing this examination, the student may register for dissertation hours (PHY 7980).

DISSERTATION DEFENSE

This is the final oral defense of the dissertation. It will be administered by the student's dissertation committee following completion of a written dissertation describing the student's research.

Physics Courses

PHY 5240 Advanced Mechanics

3 cr (3,0)

PR: PHY 4220 or C.I. Elements of continuum mechanics. Generalized coordinates, virtual work, Lagrange's equations, Hamilton's equation. Inertia tensors, stress tensors. Eulerian description of rigid body motion. Theory of small vibrations.

PHY 5346 Electrodynamics I

3 cr (3,0)

PR: PHY 3320, MAP 3302, or C.I. Boundary value problems in electrostatics and magnetostatics. Maxwells equations; EM fields in matter; wave generation and propagation; wave guides; and resonant cavities.

- PHY 5446 Laser Principles** **3 cr (3,0)**
 PR: PHY 3101, MAP 3302, PHY 4424. Classical introduction to the basic principles of laser gain media, properties of laser resonators and modes, description of specific laser systems.
- PHY 5431 Optical Properties of Materials** **3 cr (3,0)**
 PR: PHY 4324, MAP 3302, PHY 4424. Normal modes (dipole and Raman active); microscopic theory of absorption, dispersion, and refraction; wave propagation, crystal optics; scattering mechanisms, optical activity.
- PHY 5524 Statistical Physics** **3 cr (3,0)**
 PR: PHY 3046, STA 3032, PHY 4045 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 5606 Quantum Mechanics I** **3 cr (3,0)**
 PR: PHY 4604 or C.I. Basic postulates of quantum mechanics, operators, eigenvalues, parity, potential wells, harmonic oscillator, time dependent and time independent Schrodinger equation, matrix formulation, and time independent perturbation theory.
- PHY 6246 Classical Mechanics** **3 cr (3,0)**
 PR: PHY 5240 or C.I. Variational principles. Lagrange, Hamiltonian, and Poisson bracket formulations of mechanics. Hamilton's principle of least action. Hamilton-Jacobi theory. Perturbation theory. Continuous systems.
- PHY 6347 Electrodynamics II** **3 cr (3,0)**
 PR: PHY 5346 or C.I. Dynamics of charged particles in electromagnetic fields. Antennas; radiation by moving charges; magnetohydrodynamics; and multipole radiation.
- PHZ 6156 Advanced Computational Physics** **3 cr (3,0)**
 PR: PHZ 3151. Computational methods applied to the solution of problems in Atomic and molecular physics and Solid State physics.
- PHY 6434 Nonlinear Optics** **3 cr (2.5, 0.5)**
 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 6448 Specific Laser Systems** **3 cr (3,0)**
 PR: PHY 5446 or 6560 or C.I. Review of Laser Principles, Specifics of gas, ion, solid state, dye, metal vapor, free electron, and semiconductor lasers and power supplies.
- PHZ 6424 Optical Properties of Solids** **3 cr (3,0)**
 PR: PHY 5431, PHY 5606, PHY 5346. Interband transitions, free carriers, excitons, plasmas in metals and semiconductors; k.p theory, low dimensional structures, dynamic nonlinear interactions, multiphoton absorption.
- PHZ 6204 Atomic and Molecular Spectroscopy** **3 cr (3,0)**
 PR: PHY 5606. 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.
- PHY 6353 Accelerator Physics** **3 cr (3,0)**
 PR: PHY 5346, 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 Physics of Free Electrons** **3 cr (3,0)**
 PR: PHY 5346, 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.
- PHZ 6234 Atomic Physics** **3 cr (3,0)**
 PR: PHY 5606. Brief review of spectroscopy, photoionization, inner shell processes, Auger effect, atom-atom collisions, electron-atom collisions, spin polarization.
- PHY 6447 Laser Physics** **3 cr (3,0)**
 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 6624 Quantum Mechanics II** 3 cr (3,0)
PR: PHY 5606 or C.I. Time dependent perturbation theory, exchange symmetry, Dirac Equation, second quantization, and scattering theory.
- PHY 6667 Advanced Quantum Mechanics** 3 cr (3,0)
PR: PHY 5606, PHY 6624. This course will introduce the advanced graduate students to the methods of Quantum field theory, essential for the understanding of many branches of physics.
- PHZ 5304 Nuclear Physics** 3 cr (3,0)
PR: PHY 4045 or C.I. Nuclear forces, structure, models, reactions, radioactivity, fission, fusion, strange particles.
- PHZ 5405 Condensed Matter Physics** 3 cr (3,0)
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, polymers.
- PHZ 5505 Plasma Physics** 3 cr (3,0)
PR: PHY 4220, PHY 3044, 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 6115 Theoretical Methods** 3 cr (3,0)
Basic Mathematical methods applicable to all branches of physics.

- PHZ 6425 Advanced Condensed Matter Physics** 3 cr (3,0)
PR: PHY 5606, PHY 6624, PHZ 5405. Many-body techniques in condensed matter physics.

- PHZ 6971 Thesis** 6 cr

Physics Courses for Teachers

- PHY 5081C Physics of Astronomy for Teachers** 1 cr (0.5,1.5)
PR: C.I. Laws of Motion, Law of Gravity, Kepler's Laws, two body orbits, light and spectroscopy, the doppler shift, blackbody radiation, Gas Laws and stellar evolution.
- PHY 5100 Topics in Contemporary Physics for Teachers** 1 cr (1,0)
PR: C.I. The study of recent findings in a selected area such as particle physics, surface physics, planetary atmospheres; lasers; geophysics, etc.
- PHY 5015C Physics For Teachers** 3 cr (2,2)
C.I. Hands-on lecture-lab course. Dynamics, electricity, magnetism, optics, nuclear radiation.
- PHY 5200C Newtonian Mechanics for Teachers** 1 cr (0.5,1.5)
PR: C.I. A lab, lecture, demonstration course studying selected topics in classical mechanics.
- PHZ 5150C Computer Methods in Physics for Teachers** 1 cr (0.5,1.5)
PR: C.I. Trajectories with air resistance, trajectories in rotating space colonies, refraction of waves in continuous media, luminosity patterns, temperature profiles.
- PHZ 5301C Nuclear Physics for Teachers** 1 cr (0.5,1.5)
PR: C.I. The interaction of ionizing radiation with matter, alpha, beta, gamma decay, fission, fusion, neutron activation, half lives and equilibrium.
- PHY 5300C Electricity for Teachers** 1 cr (0.5,1.5)
PR: C.I. Circuits, multimeters, oscilloscopes, circuit elements.
- PHY 5302C Electromagnetism for Teachers** 1 cr (0.5,1.5)
PR: C.I. Gauss' Law, Biot-Savat Law, Amperes Law, Faraday's Law, Lenz's Law; motors, generators, AC circuits and Maxwell's equations.
- PHY 5401C Optics for Teachers** 1 cr (0.5,1.5)
PR: C.I. Geometrical and physical optics, spectrometers and lasers.
- PHY 5500C Thermal Physics for Teachers** 1 cr (0.5,1.5)
PR: C.I. Engines, heat pumps, kinetic theory, phase changes, radiation, weather.
- PHZ 5600 Special Relativity for Teachers** 1 cr (1,0)
PR: C.I. Length contraction, time dilation, simultaneity, conservation of mass-energy, conservation of momentum, Compton scattering.

1 cr (1,0)

1 cr (0.5,1.5)

1 cr (0.5,1.5)

POLITICAL SCIENCE

W. Q. Morales, Ph.D.	Associate Professor
P. H. Pollock, Ph.D.	Associate Professor
M. E. Vittes, Ph.D.	Chair and Associate Professor
A. Celso, Ph.D.	Assistant Professor
T. S. Fine, Ph.D.	Assistant Professor
D. Kiel, Ph.D.	Assistant Professor
R. Kurfirst, Ph.D.	Assistant Professor

I. 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.

II. Admission to the Political Science Program

Minimum requirements for admission to UCF as a post-baccalaureate student are outlined in the graduate catalog. In addition, any student wishing to enroll in graduate courses in political science must meet the Department's requirements for Graduate Status (either Classified or Conditional Graduate Status), or must hold regular graduate status in another program at UCF.

Requirements for Classified Graduate Status are:

1. 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

2. 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.

AND

3. An undergraduate grade point average of at least 3.0 overall.

OR

4. A combined (quantitative and verbal) GRE score of at least 1000.

Note: All applicants are required to take the GRE. Admission 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 Classified 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 classified status. Students holding conditional graduate status must meet the following requirements before applying for classified status:

1. 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.
2. For persons otherwise not qualified for classified graduate status, completion of three graduate courses, with grade B or better.
3. Completion of any other requirements determined by the Graduate Committee and stated on the student's Program of Graduate Study form.

III. Degree Requirements for M.A. Program in Political Science

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

After being admitted (either as classified or conditional), the students must meet with one of the graduate advisors to discuss his or her 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 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 these core requirements:

Quantitative Methods in Political Research

(POS 6746)

3 Hours

Seminar in American Politics

(POS 6045)

3 Hours

Seminar in Political Theory

(POT 6007)

3 Hours

AND

Seminar in International Politics

(INR 6007)

OR

Seminar in Comparative Politics

(CPO 6007)

3 Hours

12 Hours

A program of study in the political analysis track consists of

Core requirements

12 Hours

Three special topics courses from:

American Politics (POS 6938)

Political Theory (POS 6938)

International Relations (POS 6938)

Comparative Politics (POS 6938)

Political Analysis (POS 6938)

9 Hours

Electives

3 Hours

Thesis (POS 6971)

6 Hours

30 Hours

A program of study in the public policy track consists of:	
Core requirements	12 Hours
Public Policy Analysis (PUP 6007)	3 Hours
Two special topics courses from:	
Science Policy (PUP 6938)	
Social Policy (PUP 6938)	
Foreign & Defense Policy (PUP 6938)	6 Hours
Electives	3 Hours
Thesis (POS 6971)	6 Hours
	30 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 upon 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 their chosen track, a student will form a committee of three advisors and submit a written thesis prospectus which, upon acceptance by the committee, will become a part of the student's permanent file. Guidelines for the prospectus are available from the graduate 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 masters 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 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.

Political Science Courses

CPO 6007 Seminar in Comparative Politics 3 cr (3,0)

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.

INR 6007 Seminar in International Politics 3 cr (3,0)

Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods.

POS 6746 Quantitative Methods in Political Research 3 cr (3,0)

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 6045 Seminar in American National Politics 3 cr (3,0)

Examines major aspects of the American system, including mass behavior, public opinion, and political institutions.

POS 6918 Directed Independent Research Variable Credit

POS 6938 Special Topics/Political Analysis 3 cr (3,0)

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.

POS 6971 Thesis

Variable Credit

POT 6007 Seminar in Political Theory

3 cr (3.0)

An examination of analytic and normative theories of politics and society, using selected topics as a substantive focus.

PUP 6007 Public Policy Analysis

3 cr (3.0)

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 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.

PSYCHOLOGY

John M. McGuire Graduate Program Coordinator
Office: PH 322, Phone (407) 823-2216 Clinical Psychology Program

Wayne A. Burroughs Graduate Program Coordinator
Office: PH 313, Phone (407) 823-2216 Industrial/Organizational Program

Richard D. Gilson Graduate Program Coordinator
Office: PH 302F, Phone (407) 823-2216 Human Factors Program

D. W. Abbott, Ph.D. Professor
W. A. Burroughs, Ph.D. Professor
R. D. Gilson, Ph.D. Professor
J. M. McGuire, Ph.D. Professor
B. B. Morgan, Jr., Ph.D. Professor
E. J. Rinalducci, Ph.D. Professor
J. B. Rollins, Ph.D. Professor
E. P. Sheridan, Ph.D. Dean and Professor
K. Sheridan, J.D., Ph.D. Professor
M. H. Thomas, Ph.D. Interim Chair and Professor
R. D. Tucker, Ph.D. Interim Professor
B. I. Blau, Ph.D. Associate Professor
J. C. Brophy, Ph.D. Associate Professor
R. D. Fisher, Ph.D. Associate Professor
B. J. Jensen, Ph.D. Associate Professor
E. C. Shirkey, Ph.D. Associate Professor
P. M. Tell, Ph.D. Associate Professor
J. J. Turnage, Ph.D. Associate Professor
A. Y. Wang, Ph.D. Associate Professor
S. S. Guest-Houston, Ph.D. Assistant Professor
J. L. Dyck, Ph.D. Assistant Professor
N. C. Silver, Ph.D. Assistant Professor
J. A. Smither, Ph.D. Assistant Professor
W. Wooten, Ph.D. Assistant Professor

Admission

The Graduate Record Examination (GRE) is required of all graduate students. In addition to the University minimum admission criteria of a quantitative-verbal score of 1000 on the GRE or a GPA of 3.0 for the last two years of the baccalaureate degree, three standard letters of reference (at least two from academic sources) must be initiated by the student and sent by the reference directly to the department. A departmental admissions committee reviews the student's credentials and will invite a group of candidates for an interview. Final

selection is based on both paper credentials *and* the interview. Admission to the program occurs only in the fall semester.

A completed file, which includes the application, official test scores, letters of reference, and transcripts to date, are due in the department by March 1. (Materials received prior to May 1 may be reviewed for a late admission decision if there are positions available.) Unless there is a complete file by this date, you will not be considered for admission for the forthcoming fall term.

Competency/Prerequisite Requirements

Clinical Program. Applicants must have a baccalaureate degree with a major in psychology or have completed the following undergraduate psychology content course areas prior to matriculation: Introduction to Psychology; Abnormal Psychology; Developmental Psychology (Life Span preferred) or Child Psychology; Personality Theories; Learning; Physiological Psychology; and a course in Research Methods or Statistics.

Industrial/Organizational Program. Applicants must either have 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.

Programs in Psychology

There are two different Master of Science programs in Psychology.

The Master of Science degree program in Clinical Psychology is concerned with the application of psychological principles to individuals. Major areas of emphasis include assessment or evaluation skills, intervention or counseling and psychotherapy skills, plus an academic foundation in research methods. The program was initiated for the purpose of providing training and preparation at the master's level for individuals desiring to deliver clinical services through community agencies. Graduates have been involved in mental health rehabilitation through individual, marital, family and group psychotherapy, as well as crisis intervention and specialized therapeutic procedures. Graduates have met the education criteria for licensure as mental health counselors in Florida.

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 which maximize the satisfaction and productivity of employees, and the study of technological influences on human performance.

Master of Science Degree Requirements— Clinical Psychology

The M.S. degree program in Clinical Psychology is a two-year, four-semester program for full-time students with no summer course work. The program consists of a minimum of 50 semester hours of work as follows:

ACADEMIC COURSE WORK

			31 Semester Hours
CLP	6441	Individual Assessment*	3 hours
CLP	6445	Personality Theory and 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 Family Therapies*	3 hours
CLP	6932	Ethical and Professional Issues in Mental Health Practice*	3 hours
DEP	5057	Developmental Psychology	3 hours

PSB	6446	Advanced Abnormal and Clinical Psychopharmacology	3 hours
PSY	6216	Advanced Research Methodology I	4 hours
* Must coregister for the appropriate section of lab.			
**Must coregister with CYP 6948.			

LABS

6 Semester Hours

Must coregister for one hour with each course as shown above.

CLP	6456L	Clinical Lab: Counseling	1 hour
CLP	6457L	Clinical Lab: Group Therapy	1 hour
CLP	6458L	Clinical Lab: Behavior Therapy	1 hour
CLP	6459L	Clinical Lab: Marriage and Family Counseling	1 hour
CLP	6441L	Clinical Lab: Individual Assessment	1 hour
CLP	6445L	Clinical Lab: Personality Assessment	1 hour

INTERNSHIP (See details of program)

6 Semester Hours

CYP	6948	Psychology Internship	6 hours
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TREATISE (THESIS OR RESEARCH REPORT)

7 Semester Hours

PSY	6938	Research Planning	1 hour
PSY	6909	Research Report	6 hours
or			
PSY	6971	Thesis	6 hours

Total Minimum Semester Hours Required: 50

Clinical Internship Requirement

The purpose of the internship requirement is to provide the M.S. candidate in Clinical Psychology with a comprehensive, practical-based experience under direct supervision. A public agency or nonprofit institution offering services to individuals, with nondiscriminatory practices (including ability to assume financial responsibilities) is the prototype. The intern is assigned to an acceptable agency for two consecutive academic semesters (20 hours per semester). An additional commitment of two hours per week is required for the group of interns to meet with a departmental faculty member for review, feedback and discussions. The intern participates in a wide variety of psychological assessment procedures, including intellectual, personality, educational, neuropsychological and differential diagnosis. A major portion of the training is in the area of psychotherapy/counseling.

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

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

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

Treatise (Research Report or Thesis)

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

Master of Science Degree Requirements— Industrial/Organizational Psychology

The M.S. degree program in Industrial/Organizational Psychology is a four-semester program for full-time students with no summer course work; however, practicum placements and thesis research may be completed in the summer. The program consists of a minimum

of 40 semester hours of work. The required courses, which are scheduled primarily in the evenings to accommodate working students, are as follows:

Industrial/Organizational Psychology

ACADEMIC CLASS WORK

26 Semester 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	6939	Current Topics and Applied Problems in Industrial/Organizational Psychology	3 hours
PSY	6216	Advanced Research Methodology I	4 hours
PSY	6217	Advanced Research Methodology II	4 hours
PSY	6308	Psychological Testing I	3 hours
PSY	6318	Applied Testing and Selection	3 hours

PRACTICA AND LABS

6 Semester Hours

INP	6946	Industrial Psychology Practicum I	3 hours
INP	6947	Industrial Psychology Practicum II	3 hours

TREATISE (THESIS)

8 Semester Hours

PSY	6971	Treatise (Thesis)	8 hours
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Total Minimum Semester Hours Required: 40

QUALIFYING EXAMINATIONS

All students in the I/O program must pass a qualifying examination which is administered in March of the second year and covers all course work to that point.

PRACTICA

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. Practica possibilities generated by the I/O faculty and students may involve settings in private industry, federal, state, or local government, educational institutions, or consulting firms.

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

For each practicum a meeting is held between the student, the supervising faculty member, and a representative of the organization in which the work will be accomplished. Behavioral objectives are agreed upon, and it is expected that the student will carry out these objectives during the assigned time. Each practicum placement is supervised by a faculty member and the student is also responsible to the "contact" person in the organization where the work is occurring. Full-time students are typically assigned practicum projects for the fall and spring terms of their second year.

TREATISE (THESIS)

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

Doctor of Philosophy Degree Program

Human Factors Psychology

A Ph.D. degree program in Human Factors Psychology is offered. The program seeks to develop the capacity to design, conduct and apply human factors research in a variety of professional settings. It is patterned on the scientist-practitioner model of the American Psychological Association (APA) and adheres to guidelines established by the committee for Education and Training of APA's Division 21 (Applied Experimental and Engineering Psychology). The program is designed to meet the accreditation requirements of the

Education Committee of the Human Factors Society. A variety of research, consulting and internship arrangements are included in the program.

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

ADMISSIONS POLICY

The Graduate Record Examination (GRE) is required of all applicants. To be considered for acceptance as a regular graduate student, successful applicants are expected to have a minimum cumulative GRE score of about 1100 and an undergraduate GPA of about 3.20 in the last two years of study. However, the final admission criteria will normally be more stringent because of the competitiveness of the application process. Students whose native language is not English will be required to submit scores of at least 550 on the Test of English as a Foreign Language (TOEFL).

In addition, students will not normally be admitted to the program without having completed a minimum amount of basic preparation in content related to experimental psychology. This preparation will be judged on an individual basis but would typically consist of at least 18 semester hours including the following:

1. Courses in Research Methods, computer applications, and Statistical Methods.
2. General experimental psychology courses, e.g., Learning, Physiological, Perception, Human Learning, Cognition, Motivation and Measurement.

Applicants will be evaluated for program prerequisites and advised of any needs for additional preparation. Previous graduate work will be evaluated for credit on a case-by-case basis.

ADMISSION REQUIREMENTS

To be considered for admission, applicants must present:

1. A completed UCF graduate degree program application form,
2. Evidence of successful completion of undergraduate courses in statistics and in the general area of experimental psychology,
3. Official scores on the Graduate Record Examination (taken within the last five years),
4. Completed transcripts showing a baccalaureate degree and grades for all undergraduate and graduate work,
5. A written statement outlining the student's academic and professional goals, and
6. 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 March 1. Acceptance decisions are made only in the Spring semester for admission in the Fall of each year.

RESIDENCY REQUIREMENTS

A minimum of one year full-time student status is required. (Full-time is defined by UCF as a minimum of 9 hours per semester for two contiguous semesters.) Students are advised that the program is designed to be completed in 3-4 years of full-time study from the baccalaureate level and in 2-3 years from the master's level.

REQUIRED COURSES

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

Fall (Year 1)			13 Semester Hours
EXP	5256	Human Factors I	3 hours
PSY	6216	Advanced Research Methodology I	4 hours
EXP	5506	Human Cognition and Learning	3 hours
PSB	5005	Physiological Psychology	3 hours

Spring (Year 1)			11 Semester Hours
EXP	6257	Human Factors II	3 hours
PSY	6217	Advanced Research Methodology II	4 hours
EXP	5208	Sensation and Perception	3 hours
PSY	6938	Research Planning	1 hour
Summer (Year 1)			6 Semester Hours
EIN	5248C	Ergonomics	3 hours
PSY	6918	Directed Research	3 hours
Fall (Year 2)			12 Semester Hours
EXP	5255	Human Performance	3 hours
INP	6317	Organizational Psychology and Motivation	3 hours
PSY	6918	Directed Research	3 hours
Elective*			3 hours
Spring (Year 2)			12 Semester Hours
EXP	6946	Internship	6 hours
PSY	6919	Research Report	3 hours
Elective*			3 hours
Fall (Year 3)			12 Semester Hours
PSY	6919	Research Report	3 hours
EIN	6258C	Ergonomics in High Tech. Environments	3 hours
EXP	6258	Human Factors III	3 hours
Elective*			3 hours
Spring (Year 3)			12 Semester Hours
EXP	6938	Teaching Seminar	3 hours
PSY	6908	Directed Independent Studies	3 hours
Elective*			3 hours
Elective*			3 hours
Fall (Year 4)			6 Semester Hours
PSY	7980	Doctoral Dissertation	6 hours
Spring (Year 4)			6 Semester Hours
PSY	7980	Doctoral Dissertation	6 hours
Total Minimum Semester Hours Required:			90

*Elective Course Groupings for Selected Concentration Areas:

Students should choose electives in concentrated course groupings: for example, Human-Machine Systems, Environmental Factors, Performance Measurement and Evaluation, or Special Courses. Other elective course groupings may be developed for the specific interests of the student.

CANDIDACY EXAMINATIONS

Candidacy examination will be required prior to registering for dissertation courses.

Psychology Courses

CLP 5004 Psychology of Adult Adjustment

3 cr (3,0)

PR: C.I. A survey of situations encountered during adulthood, including marriage, birth, parenthood, trauma, illness, death, etc. Effective adjustment.

CLP 5166 Advanced Abnormal Psychology

3 cr (3,0)

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

CLP 6416 Biofeedback and Stress

4 cr (2,2)

PR: Graduate admission and C.I. Assessment and management of physiological stress response through biofeedback. Biofeedback treatment of stress produced clinical problems.

- CLP 6441 Individual Assessment*** 3 cr (3,0)
PR: Graduate admission and C.I. Theories and techniques of psychological assessment with primary emphasis on interviewing, skills, cognitive assessment and report writing. Experience administering a variety of individual intelligence tests.
- CLP 6441L Clinical Lab: Individual Assessment** 1 cr (0,2)
C.I. Practice in specific techniques in individual assessment. To be taken concurrently with CLP 6441.
- CLP 6445 Psychological Theory and Assessment*** 3 cr (3,0)
PR: CLP 6441, Graduate admission and C.I. Theories of personality and techniques of personality assessment with primary emphasis on interviewing skills, objective and projective techniques, and report writing.
- CLP 6445L Clinical Lab: Personality Assessment** 1 cr (0,2)
C.I. Practice in specific techniques in personality assessment. To be taken concurrently with CLP 6445.
- CLP 6456 Individual Counseling--Theory and Practice*** 3 cr (2,2)
PR: Graduate admission and C.I. Introduction to Counseling Theory. Experiential Laboratory.
- CLP 6456L Clinical Lab: Counseling** 1 cr (0,2)
C.I. Practice in specific techniques in counseling. To be taken concurrently with CLP 6456.
- CLP 6457 Group Psychotherapy*** 3 cr (2,2)
PR: CLP 6456, Graduate admission and C.I. Group counseling: Theory and Process. Experiential Group Laboratory.
- CLP 6457L Clinical Lab: Group Therapy** 1 cr (0,2)
C.I. Practice in specific techniques in group therapy. To be taken concurrently with CLP 6457.
- CLP 6458 Behavior Therapy*** 3 cr (2,2)
PR: CLP 6456, CLP 6457, Graduate admission and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique.
- CLP 6458L Clinical Lab: Behavior Therapy** 1 cr (0,2)
C.I. Practice in specific techniques in behavior therapy. To be taken concurrently with CLP 6458.
- CLP 6459 Human Sexuality, Marriage, and Family Therapies.*** 3 cr (3,0)
PR: CLP 6456, CLP 6458, Graduate admission and C.I. Survey of human sexuality, theory and practice of crisis, family and couples therapy.
- CLP 6459L Clinical Lab: Marriage and Family Counseling** 1 cr (0,2)
C.I. Practice in specific techniques in marriage and family counseling. To be taken concurrently with CLP 6459.
- CLP 6932 Ethical and Professional Issues in Mental Health Practices.*** 3 cr (3,0)
PR: Graduate admission, C.I. Examination of codes of ethics, laws, and professional standards in the mental health field.
- CYP 6948 Psychology Internship** 3 cr (2,20)
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 Developmental Psychology** 3 cr (2,2)
PR: Graduate admission or C.I. Psychological aspects of development including intellectual, social, and personality factors.
- EAB 5765 Applied Behavior Analysis with Children and Youth** 3 cr (3,0)
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.
- EXP 5208 Sensation and Perception** 3 cr (3,0)
PR: C.I. A study involving the human information processing with regard to physical and psychological variables in sensory and perceptual phenomena.
- EXP 5256 Human Factors I** 3 cr (3,0)
PR: None. Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems.

- EXP 5257 Human Factors II** 3 cr (3,0)
PR: EXP 5256 (HF1). The second in the series of basic human factors courses involving an in-depth examination of issues.
- EXP 5258 Human Factors III** 3 cr (3,0)
PR: EXP 5256 (HF1). EXP 6257 (HF2). 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 5506 Human Cognition and Learning** 3 cr (3,0)
PR: EXP 3404 and EXP 3513. Research and theory relating to attention, memory, problem solving and reasoning.
- EXP 6255 Human Performance Assessment** 3 cr (3,0)
PR: C.I. Human performance dimensions and concepts of assessment of human capabilities; performance acquisition, information processing and decision making; applications of principles to understanding of stress and performance effectiveness.
- EXP 6938 Teaching Seminar** 3 cr (3,0)
PR: C.I. Orientation to and supervision in teaching assigned courses.
- EXP 6946 Human Factors Internship** 8 cr (0,12)
PR: EXP 5256, EXP 6257, PSY 6216, PSY 6217, EXP 5255, 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.
- INP 6215 Assessment Centers and Leadership** 3 cr (3,0)
PR: Graduate admission and C.I. Survey of assessment center technology and application with emphasis on leadership theory and practice.
- INP 6317 Organizational Psychology and Motivation** 3 cr (3,0)
PR: Graduate admission and C.I. Review of theories, research and application of psychological principles to organizational settings and human motivation.
- INP 6320 Training** 3 cr (3,0)
A review of theory and practice regarding needs analysis, design, implementation, and evaluation of training programs for business, industry and government.
- INP 6605 Training and Performance Appraisal** 3 cr (3,0)
PR: Graduate admission and C.I. Survey of theories, research and practice in the areas of industrial/organizational training and performance appraisal.
- INP 6939 Current Topics and Applied Problems in Industrial/Organizational Psychology** 3 cr (3,0)
PR: Graduate admission and C.I. Survey of current topics in Industrial/Organizational psychology with emphasis on applied problems.
- INP 6946 Industrial Psychology Practicum I** 3 cr (1,6)
PR: Graduate admission and C.I. Supervised placement in an applied setting.
- INP 6947 Industrial Psychology Practicum II** 3 cr (3,0)
PR: Graduate admission and C.I. Supervised research in industry. (May be repeated for credit.)
- PSB 5005 Physiological Psychology** 3 cr (3,0)
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 Advanced Abnormal and Clinical Psychopharmacology** 3 cr (3,0)
PR: Graduate admission and C.I. Diagnosis of psychopathology and drug treatment of these disorders. Examination of the efficacy of psychoactive drugs.
- PSY 6216 Advanced Research Methodology I** 4 cr (3,2)
PR: Graduate admission and C.I. Logic and procedures of psychological research and evaluation; application of experimental and non-experimental techniques in analyzing psychological variables; review of relevant psychological research.
- PSY 6217 Advanced Research Methodology II** 4 cr (3,2)
PR: PSY 6216, Graduate admission and C.I. Structure and planning of complex psychological experiments; internal and external validity; application of advanced experimental procedures in analyzing psychological variables; review of relevant psychological research.

PSY 6308 Psychological Testing I 3 cr (3,0)
PR: Graduate admission and C.I. Theory of test construction including test reliability and validity.

PSY 6318 Applied Testing and Selection 3 cr (3,0)
PR: PSY 6308, Graduate admission and C.I. Issues in selecting employees and an examination of currently used tests in industry.

PSY 6908 Directed Independent Studies 3 cr (3,0)
PR: C.I. Conduction of a selected research study under the supervision of a faculty member in the field of Human Factors Psychology.

PSY 6918 Directed Research 3 cr (3,0)
PR: PSY 6217, EXP 6257, PSY 6938, ten additional graduate hours in PSY, and C.I. Directed Research involves supervised research activity in an agency setting. The student will devote 15 hours per week in the assigned setting to work on an applied research problem with joint supervision by faculty and agency staff.

PSY 6919 Research Report 3 cr (3,0)
PR: PSY 6918. Preparation of a written report of the project completed in PSY 6918. This report will be in the form of a research publication of technical report.

PSY 6938 Research Planning 1 cr (0,0)

PSY 6909 Research Report 1-3 cr (0,0)

PSY 6971 Thesis 1-8 cr (0,0)

PSY 7919 Doctoral Research 6 cr (0,0)

PSY 7980 Doctoral Dissertation 6 cr (0,0)

*Must coregister for the appropriate section of lab.

SOCIOLOGY, APPLIED

John P. Lynxwiler Graduate Program Coordinator
Office: FA 402, Phone (407) 823-2227

W. R. Brown, Ph.D. Professor
D. A. Fabianic, Ph.D. Chair and Professor
D. R. Dees, Ph.D. Associate Professor
A. D. Carey, Ph.D. Assistant Professor
I. J. Cook, Ph.D. Assistant Professor
D. A. Gay, Ph.D. Assistant Professor
J. P. Lynxwiler Assistant Professor

CATALOG PROGRAM DESCRIPTION

In addition to the standard admission criteria to Graduate Studies, the Department requires complete transcript of past university/college work and three letters of reference including at least one from an academic source familiar with the applicant's abilities. The Graduate Record Examination (GRE) scores should be no more than seven years old.

The applicant's records will be reviewed on an individual basis for academic deficiencies. Supplemental course work may be recommended. Note also that there is no automatic connection between acceptance as a post-baccalaureate student and acceptance into this degree-granting program. Consult the Program *Director* whenever questions arise.

Program in Applied Sociology

The Department of Sociology and Anthropology offers a graduate program leading to the Master of Arts degree in Applied Sociology with an opportunity for concentrated studies in deviant behavior and community policy. A primary focus of the graduate program is to enhance the abilities of the students to apply a sociological perspective and specific analytical skills to research topics in the Central Florida area. Toward this objective, the

program promotes the application of sociological and social psychological knowledge, principles, and research skills in a variety of organizational, community, and institutional settings. Beyond a curriculum appropriate for general applied sociology, the program offers instruction and opportunity pertaining to deviant behavior, social disorganization, and social problems.

Examples of competencies in applied sociology include effective skills in conceptualization of human and organizational problems, communication skills, program design and evaluation, planning, feasibility and needs assessment studies, data management, analysis and presentation, the application of general systems theory and the social conflict perspective to organizational problems, community development and planned change.

Master of Arts Degree Requirements— Applied Sociology

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 options. 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 (nonrestricted) electives in consultation with their faculty advisor. No more than 6 hours may be taken in UCF graduate programs outside the Department.

THESIS OPTION

6 Semester Hours

A minimum of six semester hours of thesis credit and a successful defense of a thesis is required. The thesis option is highly recommended for students interested in community college teaching and/or graduate work beyond the Master of Arts Degree.

NON-THESIS OPTION

6 Semester Hours

All of the Department's graduate courses are research oriented seminars; however, in lieu of the thesis, students must take two additional courses (6 hours) in a chosen area of specialization. Non-thesis students may substitute up to 6 hours of their elective course work by completing a graduate practicum/internship (SYA 6946). The practicum must be approved by the Advisory Committee.

EXAMINATION REQUIREMENTS

Thesis Option:

1-8 Semester Hours

Mandatory requirements include the successful completion of a two-part written comprehensive examination and a final oral defense of thesis.

Non-Thesis Option:

Mandatory requirements include the successful completion of a two-part comprehensive written examination and an additional specialty examination in the selected area of specialization.

Total Minimum Semester Hours Required: 30

Applied Sociology Courses

ANT 5479 Comparative Cultural Analysis

3 cr (3,0)

The dynamics of cultural processes in a multi-ethnic setting.

SYA 5625 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 6126 Social Theory** **3 cr (3,0)**
PR: C.I. The study of selected sociological theories in terms of relevance, usefulness, and adequacy for applied sociology.
- SYA 6305 Social Research** **3 cr (3,0)**
PR: C.I. Research methodology including problem conceptualization, sampling designs, research proposals, data collection and evaluation techniques for applied settings.
- SYA 6455 Research Analysis** **3 cr (2,2)**
PR: SYA 6305, Undergraduate statistics, or C.I. Data management, selection of statistics, data analysis, evaluation, data presentation, and computer skills.
- SYA 6656 Social Organization and Human Resources** **3 cr (3,0)**
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 Program Design and Evaluation** **3 cr (3,0)**
PR: C.I. Techniques of system and policy assessment, evaluation and design. Determination of consequences and implications of policies and practices in applied settings.
- SYA 6971 Thesis** **1-8 cr (0,0)**
- SYO 6515 Issues in Social Disorganization** **3 cr (3,0)**
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 6045 Clinical Sociology** **3 cr (3,0)**
PR: C.I. The use of applied strategies which employ sociological diagnosis and treatment of community groups and their members.
- SYP 6515 Deviant Behavior Issues** **3 cr (3,0)**
PR: C.I. An examination and evaluation of the forms of social deviance, and the organizations designed to respond to them.

STATISTICAL COMPUTING

James R. Schott Graduate Program Coordinator
Office: CC II 226, Phone (407) 823-2797

M. E. Johnson, Ph.D. Professor and Chair
G. D. Richardson, Ph.D. Professor
P. N. Somerville, Ph.D. Professor
L. C. Malone, Ph.D. Associate Professor
J. R. Schott, Ph.D. Associate Professor
L. L. Hoffman, Ph.D. Assistant Professor
D. Nickerson, Ph.D. Assistant Professor
M. Wang, Ph.D. Assistant Professor

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 semester hours of credit earned towards the baccalaureate or a GRE score of at least 1000 on the combined verbal-quantitative sections of the General (Aptitude) Test. The GRE score must be less than five years old. Students entering the graduate program should have a good working knowledge of at least one programming language, and should have taken undergraduate courses in calculus, matrices (or linear algebra), and statistical methods. Those students who are not adequately prepared in these areas may need to complete some undergraduate coursework before beginning their graduate program. Applicants not qualified for regular graduate status may be initially admitted to the University in post-baccalaureate status and later admitted to regular status once all deficiencies have been eliminated.

Program in Statistical Computing

The program provides a sound foundation in statistical theory, statistical methods, numerical methods in statistical computing, and in 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.

Master of Science Degree Requirements— Statistical Computing

The Statistical Computing degree requires a total of 36 credit hours, with a minimum of 30 hours of course work.

REQUIRED COURSES

21 Semester Hours

STA	6236	Regression Analysis	3 hours
STA	5205	Experimental Design	3 hours
STA	6326	Introduction to Theoretical Statistics I	3 hours
STA	6327	Introduction to Theoretical Statistics II	3 hours
STA	6329	Statistical Applications of Matrix Algebra	3 hours
STA	6246	Linear Models	3 hours
STA	6106	Statistical Computing	3 hours

RESTRICTED ELECTIVES

15 Hours

Other statistics courses will be selected by the student in consultation with the advisor. Certain graduate courses in computer science, mathematics, and engineering may be selected if approved by the Department of Statistics.

EXAMINATION

All students must take a comprehensive written examination covering the courses, STA 6236, STA 5205, STA 6326, and STA 6327. For full-time students, this exam normally will be taken just prior to the start of the second year of graduate work.

Total Minimum Semester Hours Required:

36

Statistics Courses

STA 5156 Probability and Statistics for Engineers

3 cr (3,0)

PR: STA 3032 or equivalent. Theory and applications of discrete and continuous random variables; hypothesis tests, confidence intervals, regression analysis and correlation.

STA 5205 Experimental Design

3 cr (3,0)

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 Statistical Analysis

3 cr (3,0)

PR: STA 3023; not open to students who have completed STA 4164. Data analysis; statistical models; estimation; tests of hypotheses; analysis of variance, covariance and multiple comparisons; regression and nonparametric methods.

STA 5505 Categorical Data Methods

3 cr (3,0)

PR: STA 4163 or STA 5206. Considers discrete probability distributions, contingency tables, measures of association and advanced methods including loglinear modeling, logistic regression, McNemar's Test, Mantel-Haenszel tests.

STA 5825 Stochastic Processes and Applied Probability Theory

3 cr (3,0)

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 6106 Statistical Computing**3 cr (3,0)**

PR: Knowledge of a programming language, STA 4164. Percentage point algorithms, methods for distributions; random variate generation; computational methods for regression analysis; bootstrap, jackknife, sample re-use, cross-validation; software development for statistical problems.

STA 6226 Sampling Theory and Applications**3 cr (3,0)**

PR: STA 4321. Different techniques of sampling, sampling for proportions, choosing sample size, ratio estimates, effects of sampling and non-sampling errors.

STA 6236 Regression Analysis**3 cr (3,0)**

PR: MAS 3113 and STA 4164. General linear model, model aptness and remedial measures, regression through the origin, independent and dependent indicator variables, multicollinearity, outliers, biased regression.

STA 6246 Linear Models**3 cr (3,0)**

PR: MAS 5115, STA 4164, and STA 4322. Theoretical development of full rank linear statistical models, least squares and maximum likelihood estimation, interval estimation, hypothesis testing, introduction to less than full rank models.

STA 6507 Nonparametric Statistics**3 cr (3,0)**

PR: At least one course in statistics. Theory and methods for one and two sample problems; one and two way layouts; independence problems; regression problems.

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

PR: MAS 3113, 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 Applied Time Series Analysis**3 cr (3,0)**

PR: STA 4322, MAS 3113. Stationarity, autocorrelation, moving averages and autoregressive processes. Non-stationary time series. Identification and estimation. Forecasting.



Credit: Charles Morrow

STA 4102 Statistical Computing
PR: Reviews of a programming language, STA 4104. Percentage point algorithms, methods for
distributions, random variate generation, computational methods for regression analysis, bootstrap,
jackknife, sample mean, cross-validation, software development for statistical problems.

STA 6226 Sampling Theory and Applications
PR: STA 4321. Delineation of sampling, sampling for proportion, choosing sample size, ratio
estimates, effect of sampling and non-sampling errors.

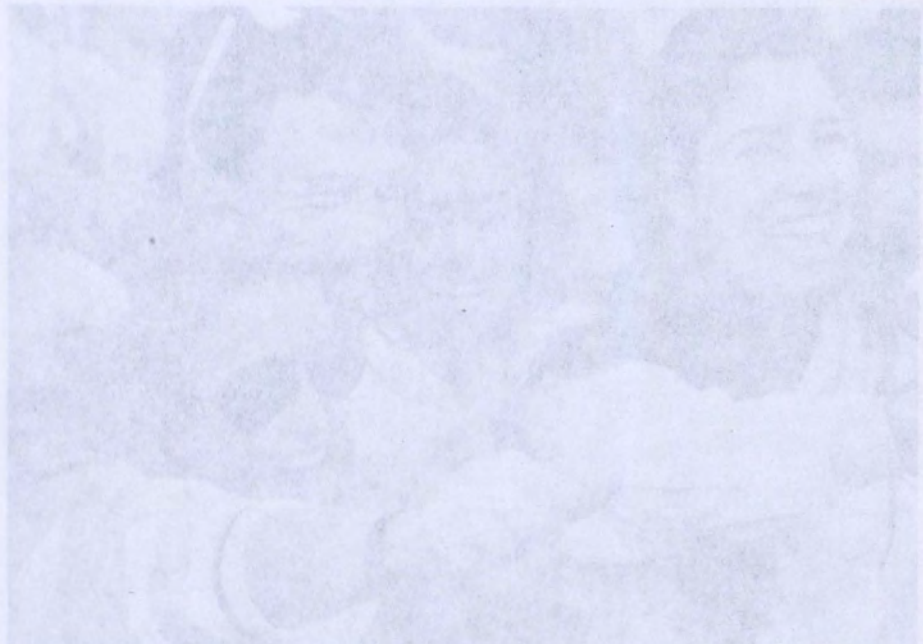
STA 6227 Regression Analysis
PR: MAS 5113 and STA 4104. General linear model, model goodness and remedial measures, regression
through the origin, independent and dependent indicator variables, multicollinearity, outliers, biased
regression.

STA 6242 Linear Models
PR: MAS 5113, STA 4104, and STA 4322. Theoretical development of full rank linear statistical models,
least squares and maximum likelihood estimation, interval estimation, hypothesis testing, introduction to
less than full rank models.

STA 6247 Programmatic Statistics
PR: At least one course in statistics. Theory and methods for one and two sample problems, one
and two way layouts, independent groups, regression problems.

STA 6247 Multivariate Statistical Methods
PR: MAS 5113, STA 4104 and STA 4322. Concepts of statistical relationships among several variables
and methods for inference. Multivariate normal, Hotelling's T^2 , multivariate analysis of variance, canon-
ical correlations and principal components.

STA 6247 Applied Time Series Analysis
PR: STA 4322, MAS 5113. Stationarity, autocorrelation, moving averages and autoregressive processes,
non-stationary time series, log-linear and estimation, forecasting.



Credit: Charles Morrow

COLLEGE OF BUSINESS ADMINISTRATION

The College of Business Administration offers four professional programs leading to the master's degree: Master of Business Administration, Master of Science in Accounting, Master of Science in Taxation, and Master of Arts in Applied Economics. Also offered is a Doctor of Philosophy Degree (Ph.D.) in Business Administration with majors in Accounting and Finance. The Master of Business Administration program is also conveniently available to Brevard County and Daytona residents. Some courses are offered at UCF's Brevard Campus in Cocoa and others are taught by UCF College of Business faculty on the Melbourne Campus of Brevard Community College. Classes in Daytona are taught at the UCF Building on the campus of Daytona Beach Community College. All graduate programs in business are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

The mission of the College of Business Administration at the University of Central Florida is to provide quality business education programs, at the undergraduate, graduate, and executive levels, to the citizens of the state of Florida and to selected clientele nationally and internationally. In delivering these programs, the College places primary emphasis on excellent teaching and research with a strong commitment to developing mutually supportive relationships with the business community of Central Florida.

In pursuit of its mission, the College of Business Administration affirms its commitment to the University's focus on excellence and accent on the individual. Furthermore, the College pledges to deliver innovative and progressive programs to its clientele. As the College approaches the twenty-first century, it has adopted "Driven by Excellence" as a motto and guiding force in achieving its goals and objectives.

COLLEGE ADMINISTRATION

R. C. Huseman Dean
J. D. Hatfield Associate Dean
S. S. Graham Assistant Dean

L. B. Putchinski Graduate Program Coordinator
Office: BA 241, Phone (407) 823-2186

L.P. Jarvis Brevard Campus Coordinator
Phone (407) 632-0098

J. H. Potts Phone (904) 255-7423, ext. 4071Daytona Campus Coordinator

Faculty

School of Accounting

H.R. Anderson, Ph.D. Professor
C. D. Bailey, Ph.D. Professor
D.D. Bandy, Ph.D. Knights' Professor of Taxation
T. G. Evans, Ph.D. Director and Professor
J. H. Potts, Ph.D. Professor
W.L. Johnson, Ph.D. Associate Professor
T.E. Phillips, Ph.D. Associate Professor
J.H. Salter III, Ph.D. Associate Professor
L.J. Savage, Ph.D. Associate Professor
J. K. Welch, Ph.D. Associate Professor
P.R. Welch, Ph.D. Associate Professor
P.M. Goldwater, Ph.D. Assistant Professor
A.J. Judd, Ph.D. Assistant Professor
C. F. Kelliher, Ph.D. Assistant Professor
N. Klintworth, J.D. Assistant Professor
R.M. Landry, Ph.D. Assistant Professor
P.B. Roush, Ph.D. Assistant Professor

Economics

F.A. Raffa, Ph.D.	Professor
B. Rungeling, Ph.D.	Professor
B.M. Braun Ph.D.	Associate Professor
A.E. Day, Ph.D.	Associate Professor
R.A. Hoffer, Ph.D.	Associate Professor
D.A. Hosni, Ph.D.	Associate Professor
T.L. Martin, Ph.D.	Associate Professor
W.W. McHone, Ph.D.	Chair and Associate Professor
R.L. Pennington, Ph.D.	Director and Associate Professor
M. Soskin, Ph.D.	Associate Professor
K.R. White, Ph.D.	Associate Professor
J.A. Xander, Ph.D.	Associate Professor
W.E. Gibbs, Ph.D.	Assistant Professor
W.R. Kilbride, Ed.D.	Assistant Professor
Y. Otsuka, Ph.D.	Assistant Professor

Finance

W.W. Reiff, D.B.A.	Professor
D.F. Scott, Jr., Ph.D.	Chair in American Private Enterprise and Professor
S.M. Atkinson, D.B.A.	Associate Professor
J.M. Cheney, Ph.D.	Associate Professor
R.J. Clayton, Ph.D.	Chair and Associate Professor
S.S. Graham, Ph.D.	Assistant Dean and Associate Professor
L.P. Hsueh, Ph.D.	Associate Professor
N.K. Modani, Ph.D.	Associate Professor
W.C. Weaver, Ph.D.	Associate Professor
Y.A. Liu, Ph.D.	Assistant Professor
A.D. Neustel, Ph.D.	Assistant Professor
H. Park, Ph.D.	Assistant Professor
R.E. Spudeck, Ph.D.	Assistant Professor

Management

C.L. Eubanks, Ph.D.	Professor
H.R. Jones, Ph.D.	Chair and Professor
W.A. Bogumil, Jr., Ph.D.	Associate Professor
W.G. Callarman, D.B.A.	Associate Professor
P.M. Fandt, Ph.D.	Associate Professor
L.W. Fernald, Jr., D.B.A.	Associate Professor
S. Goodman, Ph.D.	Associate Professor
W. Leigh, Jr., Ph.D.	Associate Professor
P.S. Lewis, Ph.D.	Associate Professor
R.L. Martin, Ph.D.	Associate Professor
J.M. Ragusa	Associate Professor
S.A. Rozenkrantz	Associate Professor
U. Gupta, Ph.D.	Assistant Professor

Marketing

D.L. Davis, D.B.A.	Professor
P.L. Gillett, Ph.D.	Professor
G.W. Paul, Ph.D.	Professor
R.S. Rubin, Ph.D.	Professor
R. Fisk, Ph.D.	Acting Chair and Associate Professor
D.A. Fuller, Ph.D.	Associate Professor
L.P. Jarvis, Ph.D.	Associate Professor
M.H. Morris, Ph.D.	Associate Professor

ADMISSION TO MASTER'S PROGRAMS

Before candidates will be considered for admission, all required application documents—application, official transcripts, GMAT test score (or GRE test score for the program in Applied Economics only) and for M.B.A. and M.A.E. only, an essay and three recommendations—must be received in the College of Business Graduate Office by:

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

Admission to graduate study in the College of Business Administration is open to individuals with a baccalaureate degree in any discipline from a regionally accredited college or university. Thus, all graduate programs are open to graduates in education, engineering, arts, sciences, and other fields as well as business.

Admissions are restricted each semester to an allotted number of individuals showing high promise of success in post-graduate studies. Admission criteria include academic achievement as an upper-division undergraduate student and satisfactory performance on the GMAT. For the M.A. in Applied Economics degree only, scores on either the GRE or GMAT may be submitted. Both GMAT and GRE scores have a limit of 5 years.

The average grade point average for students entering the graduate business programs during the most recent academic year was 3.3. The average GMAT score for the same group was at the 75th percentile. Other indicators of promise include the applicant's extracurricular activities, work experience and job responsibilities, and leadership experience.

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

Enrollment in graduate courses in the College of Business Administration is limited to students who have been accepted and classified with regular graduate status in the M.B.A. program, M.S. in Accounting, M.S. in Taxation, or the M.A. in Applied Economics, and to other students with regular graduate status elsewhere in the University. Graduate level courses may not be taken unless a student is accepted into a graduate program, i.e., graduate courses may not be taken in a post-baccalaureate status.

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

ACADEMIC STANDARDS

Graduate students in the College of Business Administration must maintain an overall 3.0 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. Further, if a graduate student accumulates grades of "C" or lower or unresolved "I" grades in more than three (3) foundation core courses, he will be disqualified from the program. If a graduate student accumulates more than six (6) hours of "C" or lower and/or unresolved "I" grades on course work in the professional core, then he will be disqualified from the graduate program. The forgiveness policy does not apply to any courses (graduate or undergraduate) taken by graduate students in the College of Business Administration. Students in all graduate programs must achieve a minimum grade of "C" in all foundation and professional core courses.

MASTER'S PROGRAMS

MASTER OF BUSINESS ADMINISTRATION

Program Advisor: L. B. Putschinski, BA 241, Phone (407) UCF-2186

Brevard Campus Advisor: L. P. Jarvis, Phone (407) 632-0098

Daytona Campus Advisor: J. H. Potts, Phone (904) 255-7423 Ext. 4071

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

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

The program can be completed on either a full-time or part-time basis on the Orlando Campus. For Brevard County residents the program is available on a part-time basis in the evening with some coursework offered on UCF's Brevard Campus in Cocoa and some coursework taught by College of Business Administration faculty at Brevard Community College's Melbourne Campus. The program is also offered on a part-time basis, evenings, at the UCF Building on the Daytona Beach Community College campus.

Master of Business Administration— Degree Requirements

Normally, the M.B.A. program can be completed in two years of full-time study. Recent related course work in business administration and certain quantitative areas, however, can reduce the length of the program. The curriculum consists of two parts, a foundation core and a professional core.

The foundation core is defined by the course requirements listed below, and its completion is a prerequisite to entering the professional core. Note that all or part of the foundation core requirements may be satisfied through advanced standing given in view of a student's prior equivalent course work at the undergraduate or graduate level provided such course work has been satisfactorily completed at a regionally accredited college or university, preferably one accredited by the AACSB.

FOUNDATION CORE

			33 Semester Hours
ACG	5005	Financial 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
MAC	1104	College Algebra	3 hours
MAC	3233	Concepts of Calculus	3 hours
MAN	5050	Management Concepts	3 hours

MAN	5501	Introduction to Production/Operations Management	3 hours
ISM	5021	Introduction to Management Information Systems	3 hours
MAR	5055	Marketing Concepts	3 hours

The professional core consists of 24 credit hours of advanced course work that substantially extends and applies knowledge developed in the foundation core. In addition, through the selection of nine credit hours of approved electives, the student has the opportunity to develop some degree of specialization in one of the following: accounting, economics, finance, management, marketing, information systems or entrepreneurship.

PROFESSIONAL CORE			24 Semester Hours
ACG	6425	Managerial Accounting Analysis	3 hours
ECO	6115	Economic Analysis of the Firm	3 hours
ECO	6416	Statistical Methods for Business Decisions	3 hours
FIN	6406	Financial Analysis and Management	3 hours
MAN	6245	Organizational Behavior and Development	3 hours
MAN	6721	Business Policy and Responsibility	3 hours
MAN	6546	Quantitative Models for Business Decisions	3 hours
MAR	6816	Marketing Policy	3 hours

M.B.A. with Specialization in Marketing

Students seeking a M.B.A. degree with a specialization in marketing should enroll in the M.B.A. Program. A specialization in Marketing requires a minimum of 9 hours of graduate electives, in addition to MAR 6816. Students may take their 9 hours of elective courses in marketing from the following courses:

MAR	6406	Sales Management
MAR	6456	Industrial Marketing
MAR	6616	Marketing Research
MAR	6666	Marketing Models
MAR	6706	Contemporary Marketing Problems
MAR	6845	Services Marketing

Marketing undergraduate majors are not allowed to take MAR 6816. Instead, they must replace the course with one of the marketing electives outlined above.

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 program coordinator. The M.B.A. program does not require a thesis. Students may not take more than 9 semester hours in accounting electives.

EXAMINATION

The end-of-program requirement for the Master of Business Administration degree will include the following:

1. Students completing the program in three (3) consecutive years (no interruptions) or less will complete the capstone, integrative course MAN 6721, Business Policy and Responsibility, with a grade of "B" or better.
2. Students requiring more than three (3) years to complete the professional core must pass a comprehensive, integrative examination consisting of four (4) equal parts covering the areas of economics, finance, management and marketing. Each part of the test must be passed. If any part of the examination is failed on the initial attempt, the student will prepare a plan of study in cooperation with the Department Chair and Director of the M.B.A. program in order to be eligible to retake that part in the following term. Each section may be taken a maximum of two times.

Total Minimum Semester Hours Required:

33-63

MASTER OF SCIENCE IN ACCOUNTING

Program Advisor: L. J. Savage, BA 433, Phone (407) UCF-5667

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

The Master of Science in Accounting degree is awarded upon satisfactory completion of a graduate program of 30 semester hours. At least 15 of the 30 hours must be made up of 6000 level courses. Students, with the assistance and approval of the program advisor, may select an area of specialization in Management, Public, Tax, General, or Not-for-Profit Accounting. Following is a list of required courses and restricted electives.

Master of Science in Accounting— Degree Requirements

REQUIRED COURSES			30 Semester Hours
			15 Semester Hours
ACG	5346	Cost Accounting II	3 hours
TAX	5015	Federal Income Tax II	3 hours
ACG	5636	Advanced Auditing	3 hours
ACG	6405	Accounting Information Systems II	3 hours
ACG	6805	Seminar in Accounting Theory	3 hours

RESTRICTED ELECTIVE COURSES 15 Semester Hours

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

Two courses from the following:

ACG	6356	Seminar in Cost Accounting	3 hours
ACG	6696	Seminar in Auditing	3 hours
ACG	6806	Seminar in Professional Accounting Issues	3 hours
ACG	6895	Professional Accounting Practice	3 hours
ACG	6519	Seminar in Governmental and Nonbusiness Organizations	3 hours
TAX	6065	Seminar in Tax Research	3 hours
TAX	6135	Seminar in the Taxation of Corporations and Shareholders	3 hours
TAX	6205	Seminar in Taxation of Partnership Income	3 hours
TAX	6405	Seminar in the Taxation of Estates, Gifts and Trusts	3 hours
TAX	6845	Seminar in Tax Planning	3 hours

Two courses from the following:

ECO	6115	Economic Analysis of the Firm	3 hours
ECO	6416	Statistical Methods for Business Decisions	3 hours
FIN	6406	Financial Analysis and Management	3 hours
MAN	6245	Organizational Behavior and Development	3 hours
MAN	6546	Quantitative Models for Business Decisions	3 hours
MAR	6816	Marketing Policy	3 hours

One additional course from Restricted Electives above or one of the following:

ACG	5206	Financial Accounting V	3 hours
ACG	5255	International and Multinational Accounting	3 hours
ACG	5435	Accounting Control Systems	3 hours
ACG	5506	Managerial Accounting for Governmental and Nonbusiness Organizations	3 hours
ACG	5625	Auditing and EDP	3 hours
ACG	5675	Operational Auditing	3 hours
ACG	6946	Internship	3 hours

FOUNDATION CORE

60 Semester Hours

The courses in the foundation core for this program are usually satisfied if a person enters the M.S.A. program with an undergraduate degree in accounting. Such course work must have been satisfactorily completed at a regionally accredited college or university, preferably one accredited by the AACSB. The accounting undergraduate program at UCF meets these requirements. However, if deficiencies exist, they must be satisfied before advanced course work can be taken. Some of the prerequisite course work may be satisfied through credit by examination if approved by the school.

ACG	3103	Financial Accounting I	3 hours
ACG	3113	Financial Accounting II	3 hours
ACG	3361	Cost Accounting I	3 hours
ACG	4401	Accounting Information Systems I	3 hours
ACG	3501	Financial Accounting for Governmental and Nonprofit Organizations	3 hours
ACG	4123	Financial Accounting III	3 hours
ACG	4203	Financial Accounting IV	3 hours
TAX	4001	Federal Income Tax I	3 hours
ACG	4651	Auditing	3 hours
BUL	3112	Business Law I	3 hours
BUL	3121	Business Law II	3 hours
ECO	5005*	Economic Concepts	3 hours
ECO	5415*	Statistics for Business and Economics	3 hours
FIN	5405*	Financial Concepts	3 hours
MAC	3233	Concepts of Calculus	3 hours
MAN	4720	Business Policy	3 hours
MAN	5050*	Management Concepts	3 hours
MAN	5501*	Introduction to Production/Operations Management	3 hours
ISM	5021*	Introduction to Management Information Systems	3 hours
MAR	5055*	Marketing Concepts	3 hours

*Or undergraduate course equivalent taken as an undergraduate student.

Student must show clear evidence of proficiency in oral and written communication.

EXAMINATION

Satisfactory completion of an end-of-program comprehensive examination is required.

The M.S. in Accounting program does not require a thesis.

MASTER OF SCIENCE IN TAXATION

Program Advisor: Dale Bandy, BA 435, Phone (407) UCF-2964 or UCF-2463

The Master of Science in Taxation degree program provides candidates with an opportunity to specialize in taxation. The program emphasis is on the preparation of individuals for careers as professional accountants in public practice, government, and industry. (This program satisfies the requirements of the State Board of Accounting to qualify for the CPA examination if a candidate holding the appropriate undergraduate degree in accounting takes ACG 5636, Advanced Auditing, as an elective in the M.S.T. program.) The Master of Science in Taxation degree is awarded upon completion of a graduate program with a minimum of 30 semester hours. The program consists of 18 hours of required graduate tax courses and 12 hours of restricted electives. Electives are selected with the assistance and approval of the advisor. Required courses and available electives are described below.

Master of Science in Taxation— Degree Requirements

REQUIRED COURSES

18 Semester Hours

TAX	5015	Federal Income Tax II	3 hours
TAX	6065	Seminar in Tax Research	3 hours
TAX	6135	Seminar in the Taxation of Corporations and Shareholders	3 hours

TAX	6205	Seminar in Taxation of Partnership Income	3 hours
TAX	6405	Seminar in Taxation of Estates, Gifts, and Trusts	3 hours
TAX	6845	Seminar in Tax Planning	3 hours

RESTRICTED ELECTIVE COURSES

12 Semester Hours

A total of 12 semester hours of electives must be selected with advisor approval. Master of Science in Taxation electives may be selected from either the required courses or any category of elective courses available in the Master of Science in Accounting degree program (other than the 18 semester hours of tax courses listed above).

FOUNDATION CORE

60 Semester Hours

The courses in the foundation core for this program are satisfied if a person enters the M.S.T. program with a recent undergraduate degree in accounting from an AACSB accredited college or university. The accounting undergraduate program at UCF meets this requirement. Students with non-accounting undergraduate degrees or degrees from unaccredited institutions must complete the 60 semester hour foundation core. Credit is given for previously completed work. The courses included in the foundation core are listed in the Master of Science in Accounting degree requirements.

EXAMINATION

Satisfactory completion of the end-of-program comprehensive examination is required.

Master of Arts in Applied Economics

Program Advisor: R. L. Pennington, BA 325, Phone (407) UCF-2870

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

Master of Arts in Applied Economics— 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	5005	Economic Concepts	3 hours
ECO	5415	Statistics for Business and Economics	3 hours
MAC	1104	College Algebra	3 hours
MAC	3233	Concepts of Calculus	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 elective course work is required.

NON-ECONOMICS ELECTIVES

0-9 Semester Hours

A maximum of nine hours of approved non-economics elective course work may be completed in disciplines such as accounting, finance, management, marketing, mathematics, statistics, public administration, and computer science. Career-oriented elective course work tracks are presented in later material.

THESIS OR INTERNSHIP

6 Semester Hours

Six credit hours of thesis or internship may be used to complete the M.A. in Applied Economics degree. The candidate may fulfill this requirement by completing: (1) a formal thesis on a topic selected in consultation with the candidate's advisory committee and meeting both departmental and university requirements, or (2) an internship consisting of work in a business or governmental agency and an end-of-project report.

FINAL EXAMINATION

Candidates must satisfactorily complete a comprehensive final examination. If the thesis or internship option is chosen to complete the degree, the examination will normally consist of an oral examination over the thesis or internship project. The candidate's supervisory committee will have discretion to determine the extent of this requirement. Candidates choosing the non-thesis option will be required to pass a written examination covering economic theory and the candidate's career track.

Total Minimum Semester Hours Required:

30

CAREER-ORIENTED ELECTIVE TRACKS

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

1. 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	6266	Business Cycles and Forecasting
ECO	6226	Seminar in Money, Banking and Monetary Policy
ECP	6705	Managerial Economics
FIN	6406	Financial Analysis and Management
FIN	6425	Asset Management and Financial Decisions
FIN	6506	Analysis of Investment Opportunities
FIN	6627	International Financial Management
RMI	6008	Risk Management

2. Public Sector Economics

For candidates seeking careers in the public sector as planners, policy analysts, or regulators, selection among the following electives is recommended:

ECO	6226	Seminar in Money, Banking and Monetary Policy
ECO	6505	Public Finance and Fiscal Policy
ECP	6205	Labor Economics
ECP	6405	Industrial Organization and Performance
ECP	6426	Economics of Regulated Industries
ECP	6605	Economics of Urban and Regional Problems
ECP	6705	Managerial Economics
REE	6306	Corporate Real Estate Investment Decision-Making

Approved electives in Public Administration

Approved electives in Political Science

Approved electives in Political Theory

3. Quantitative Economics

For candidates seeking careers as analysts, consultants, or researchers in business, government, or nonprofit institutions, selection among the following quantitative electives is recommended:

ECO	6266	Business Cycles and Forecasting
ECO	6424	Econometrics
ECP	6705	Managerial Economics
MAN	6546	Quantitative Models for Business Decisions
MAR	6616	Marketing Research Methods

4. International Political Economy

For candidates seeking positions with international organizations (such as the World Bank or United Nations), or overseas business or government appointments, selection among the following electives is recommended:

ECO	6705	Seminar in International Economics
ECS	6015	Economic Development
FIN	6627	International Financial Management
INR	6007	Seminar in International Politics
PUP	6058	Issues in International Public Policy

5. Human Resource Economics

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

ECP	6205	Labor Economics
ECS	6015	Economic Development
EIN	5117	Management Information Systems
EIN	6258	Man-Computer Interaction
EVT	6267	Vocational Program Planning, Development and Evaluation
ISM	6121	Systems Analysis and Development
MAN	6156	Personnel Resources Administration
MAN	6245	Organizational Behavior and Development
PAD	6417	Human Resource Management

Doctoral Program

Doctor of Philosophy Degree—Ph.D.

J. D. Hatfield	Program Director
Office: BA 230, Phone (407) UCF-5094	
P.R. Welch	Accounting Coordinator
Office: BA 429, Phone (407) UCF-2958	
R. J. Clayton	Finance Coordinator
Office: BA 420, Phone (407) UCF-5756	

The objective of the doctoral program in business administration is to prepare students for academic careers in higher education in accounting and finance and management careers in profit and non-profit 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.

ADMISSION

Students applying for admission to the doctoral program in Business Administration will be required to submit recent scores on the Graduate Management Admission Test (GMAT). The international student must submit the Test of English as a Foreign Language (TOEFL) score if the student is not a graduate from an accredited college or university in the United States. Each international student must also submit a minimum score of 240 on the Test of Spoken English (TSE). In special cases, students will be admitted to the Ph.D. program with a bachelor's degree. Admission decisions are made on the recommendation of the faculty of the appropriate department or school.

Before candidates will be considered for admission, all required application documents including application, official transcripts, and GMAT test scores must be received in the College of Business Graduate Office by March 1.

DEGREE REQUIREMENTS

Upon admission to the doctoral program, the student shall be assigned an advisory committee. The student, with the approval of the student's advisory committee, shall complete a program of study, which, at a minimum, shall consist of the following:

FOUNDATION BODY OF KNOWLEDGE

30 Semester Hours

In Finance the foundation body of knowledge includes (a) the *Common Body of Knowledge* of the Master's in Business Administration Degree, or its equivalent, and (b) graduate credit hours (6 semester hours—total) in macro- and microeconomic theory.

For Accounting this requirement may be satisfied in any of the four following ways: (1) M.S.A., (2) M.S.T., (3) master's degree from an accredited program plus CPA, or (4) a Florida 150 hour CPA that includes certain accounting courses deemed essential by the Accounting Ph.D. Coordinator or the student's advisory committee.

Any selected alternative must include a graduate-level microeconomics course and a graduate-level macroeconomics course.

MAJOR CONCENTRATION

15 or 16 Semester Hours

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

Accounting Major:

16 Semester Hours

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

Finance Major:

15 Semester Hours

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

MINOR CONCENTRATION

9 Semester Hours

Students must select a minimum of nine hours in a unified area approved by the student's doctoral study advisory committee. Each student's program of study is individually tailored to accommodate student interests whenever possible, and this course work may be developed from offerings in the following disciplines with the advice and consent of the respective departments and advisory committee:

Accounting	Computer Science
Economics	Statistics
Finance	Political Science
Management	Sociology
Marketing	Engineering
Psychology	Mathematics

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 data bases and software are also

expected. The required course work must include the following two areas (a total of 6 semester credit hours):

GEB 7910 Research Methods in Business
QMB 7565 Applied Business Statistics

The remaining 9 semester hours (in addition to the minor concentration) typically are selected from offerings in the following disciplines:

Accounting
Economics
Statistics
Engineering

Sociology
Psychology
Management Science

Computer Science
Mathematics

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

6-24 Semester Hours

Total Doctoral Program Hours Required:

75-94 Semester Hours

FINAL DEFENSE

The successful completion of a final oral examination is required. This examination concentrates on, but is not limited to, the student's dissertation defense.

College of Business Administration Courses

ACG 5005 Financial Accounting Concepts

3 cr (3,0)

PR: Acceptance into the graduate program. The conceptual background for financial statements. (Not open to accounting majors.)

ACG 5206 Financial Accounting V

3 cr (3,0)

PR: ACG 4123 or C.I. and meet School admission requirements. Problems of partnerships, accounting for branches, bankruptcy, installment sales, accounting for estates and trusts, and interim reporting.

ACG 5255 International and Multinational Accounting

3 cr (3,0)

PR: ACG 4123 or C.I. and meet School admission requirements. An examination of the environmental factors affecting international accounting concepts and standards. Cross-country differences in accounting treatments are compared.

ACG 5346 Cost Accounting II

3 cr (3,0)

PR: ACG 3361, ACG 4123, FIN 3403, ECO 3411 or C.I. and meet School admission requirements. Continuation of ACG 3361. Overhead and joint cost allocation, capital budgeting and analysis, EOQ analysis, decentralization, and quantitative decision analysis.

ACG 5435 Accounting Control Systems

3 cr (3,0)

PR: Graduate standing, ACG 3361 and ACG 4401, or ACG 5625, or C.I. An integrative course designed to provide a systematic approach to the integration of financial accounting, managerial accounting, taxation, and general business courses.

ACG 5506 Managerial Accounting for Governmental and Nonbusiness Organizations

3 cr (3,0)

PR: ACG 3501, ACG 4123 or C.I. and meet School admission requirements. Study of problems and methods of applying managerial accounting concepts in a nonprofit environment.

ACG 5625 Auditing and EDP

3 cr (3,0)

PR: ACG 4401, ACG 4123, ACG 4651 and meet School admission standards. An examination of auditing procedures followed when a company uses a computer to process financial records.

ACG 5636 Advanced Auditing

3 cr (3,0)

PR: ACG 4401, ACG 4123, ACG 4651, STA 3023 and meet School admission requirements. A continuation of ACG 4651. Special topics relative to the standards, practices and procedures followed in the audit function.

- ACG 5675 Operational Auditing** 3 cr (3,0)
PR: ACG 4123 and ACG 4651 and meet School admission requirements. The standards, principles, practices and procedures followed in the internal audit function.
- ACG 6356 Seminar in Cost Accounting** 3 cr (3,0)
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 Accounting Information Systems II** 3 cr (3,0)
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 Managerial Accounting Analysis** 3 cr (3,0)
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 Seminar in Auditing for Government and Nonbusiness Organizations** 3 cr (3,0)
PR: Graduate standing and all foundation courses for the accounting program or equivalents. Examination of standards for audit of governmental organizations and programs; institutional issues of auditor independence; reporting audit findings in a public-sector environment.
- ACG 6696 Seminar in Auditing** 3 cr (3,0)
PR: ACG 5636, graduate standing and all foundation courses for the accounting program or equivalents. A study of current selected auditing topics.
- ACG 6805 Seminar in Accounting Theory** 3 cr (3,0)
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 Seminar in Professional Accounting Issues** 3 cr (3,0)
PR: Graduate standing and all foundation courses for the accounting program or equivalents. An examination of current issues confronting the accounting profession.
- ACG 6895 Professional Accounting Practice** 3 cr (3,0)
PR: Graduate standing and all foundation courses for the accounting program or equivalents. Study of the formation and operation of a professional accounting practice.
- ACG 6946 Internship** 3 cr
3 cr
- ACG 7157 Seminar in Financial Accounting Research** 3 cr (3,0)
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 Seminar in Management Accounting Research** 3 cr (3,0)
PR: Admission to doctoral program, ACG 7157, and C.I. Extensive study of the theoretical aspects and empirical literature on accounting decision support; emphasizing human information processing, non-financial measures of effectiveness, and field research of existing practice.
- ACG 7698 Directed Research Project in Auditing** 3 cr (3,0)
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 Seminar in Auditing Research** 3 cr (3,0)
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 Accounting Research Forum** 1 cr (1,0)
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 Directed Research in Accounting** 3 cr (3,0)
PR: GEB 7910 and C.I. Advanced study in specialized areas of accounting research. Study designed to lead towards publishable research or student's dissertation. By definition, topical areas will vary.

- BUL 5125 Legal and Social Environment of Business** 3 cr (3,0)
PR: Admission to graduate program. Analysis of the legal and ethical environment of business, the effects of legislation and regulation on business activity, and the role of law and ethics in the decision making process.
- ECO 5005 Economic Concepts** 3 cr (3,0)
PR: Acceptance into the graduate program. Introduction to micro- and macro-economic analysis.
- ECO 5415 Statistics for Business and Economics** 3 cr (3,0)
PR: Acceptance into the graduate program and MAC 3233 or equivalent. Statistical theory and problems relating to business and economics including time series and correlation theory, index number theory and statistical inference.
- ECO 6115 Economic Analysis of the Firm** 3 cr (3,0)
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 Aggregate Economic Conditions and Analysis** 3 cr (3,0)
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 Seminar in Money, Banking and Monetary Policy** 3 cr (3,0)
PR: Graduate standing. Study of the structural foundation and policy making activities of the monetary authorities.
- ECO 6266 Business Cycles and Forecasting** 3 cr (3,0)
PR: ECO 5005 and ECO 6416 or equivalents, graduate standing. Use of economic tools for measuring changes in aggregate economic activity, changes in production and prices, and the use of statistical techniques.
- ECO 6305 History of Economic Thought** 3 cr (3,0)
PR: Graduate standing. A study of the leading ideas of the major contributors to the development of economic thought.
- ECO 6416 Statistical Methods for Business Decisions** 3 cr (3,0)
PR: Graduate standing and ECO 5415 or equivalent. Multivariate models, time series models, and accompanying problems are analyzed and applied to forecast situations.
- ECO 6424 Econometrics** 3 cr (3,0)
PR: ECO 6416 and graduate standing. The mathematical formulation of economic theories and the use of statistical procedures to measure the theoretical relationships and to verify or reject the theories.
- ECO 6505 Public Finance and Fiscal Policy** 3 cr (3,0)
PR: Graduate standing and ECO 5005 or equivalent. Analysis of the role of government and the effects of spending, taxing, and borrowing on the economy.
- ECO 6705 Seminar in International Economics** 3 cr (3,0)
PR: Graduate standing. An inquiry into the theory of international trade and finance, commercial policy and economic integration.
- ECP 6205 Labor Economics** 3 cr (3,0)
PR: Graduate standing and ECO 5005 or equivalent. An investigation into the nature and function of the labor markets, with specific concern for both institutional and noninstitutional imbalance.
- ECP 6405 Industrial Organization and Performance** 3 cr (3,0)
PR: Graduate standing and ECO 6115. A study of the performance of various types of market structure and practice relative to price and efficiency.
- ECP 6426 Economics of Regulated Industries** 3 cr (3,0)
PR: Graduate standing. A study of the economic, legal, and administrative foundations of regulatory policy in a broad range of industries in the American economy.
- ECP 6605 Economics of Urban and Regional Problems** 3 cr (3,0)
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 Managerial Economics** 3 cr (3,0)
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 Seminar in Comparative Economic Systems** 3 cr (3,0)
PR: Graduate standing. An examination of factors that influence economic systems, patterns of resource allocation and income distribution in differing economic environments.
- ECS 6015 Economic Development** 3 cr (3,0)
PR: Graduate standing. Analysis of theories and problems of growth and development with special attention to resource scarcity, population growth, and interaction of foreign trade and internal development.
- FIN 5405 Financial Concepts** 3 cr (3,0)
PR: Acceptance into the graduate program, 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 Management of Financial Institutions** 3 cr (3,0)
PR: Graduate standing and FIN 6406. Analysis of management policies of financial institutions including asset, liability and capital management. Study of the legal, economic and regulatory environment faced by banks.
- FIN 6406 Financial Analysis and Management** 3 cr (3,0)
PR: Graduate standing and FIN 5405 or equivalent. Conceptual and practical problems associated with financial management of the nonfinancial corporation.
- FIN 6425 Asset Management and Financial Decisions** 3 cr (3,0)
PR: Graduate standing and FIN 6406. Considers the interrelated decision making process of asset allocations, corporate fund raising, dividend policies and market maximization.
- FIN 6475 Business Valuation** 3 cr (3,0)
PR: FIN 6406. Theory and practice of estimating the value of small, closely held businesses.
- FIN 6506 Analysis of Investment Opportunities** 3 cr (3,0)
PR: Graduate standing and FIN 6406. Deals with the theory and tools of analysis required in the management of financial assets.
- FIN 6507 Seminar in Investments** 3 cr (3,0)
PR: Graduate standing, FIN 6406 and FIN 6506. Analysis of options, futures, and other derivative securities and their use in hedging strategies. Other topics include institutional equity and bond portfolio management techniques.
- FIN 6627 International Financial Management** 3 cr (3,0)
PR: ECO 6416, FIN 6406. The theory of finance as applied to the operations of multinational firms and international capital markets.
- FIN 7807 Corporate Finance Theory** 3 cr (3,0)
PR: Admission to the Business doctoral program and FIN 6406 or equivalent; ECO 6416 or equivalent; or consent of instructor. Elaborate coverage of significant theoretical/classical literature and review of empirical literature to provide a sound framework of conceptual knowledge for doctoral students.
- FIN 7813 Seminar in Financial Markets and Institutions** 3 cr (3,0)
PR: Admission to business doctoral program and FIN 6406 or equivalent, ECO 6416 or equivalent, and consent of instructor. Extensive study of the theoretical and empirical literature dealing with current theory of the operation of financial markets and financial intermediaries.
- FIN 7816 Investment Theory** 3 cr (3,0)
PR: Admission to business doctoral program, FIN 7811, QMB 7565, and consent of instructor. Extensive coverage of theoretical and empirical literature dealing with modern investment thought, portfolio theory, capital market equilibrium, and related topics.
- FIN 7915 Directed Research in Finance** 3 cr (3,0)
PR: FIN 7813, FIN 7816, and C.I. Advanced study of theory and evidence in specialized areas of Finance. Study designed to lead towards student's dissertation. By definition, topical areas will vary.
- FIN 7930 Seminar in Finance** 3 cr (3,0)
PR: FIN 7813, FIN 7816, and C.I. Study of private sector financial theory, policy, empirics, and decision-making.
- GEB 6115 Entrepreneurship** 3 cr (3,0)
PR: Graduate standing. Seminar on topics concerning the entrepreneurial process in small and large organizations, including need assessment, sources and methods of innovation, financing, and barriers to entrepreneurship.

- GEB 6365 International Business Environment** 3 cr (3,0)
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 Research Methods in Business** 3 cr (3,0)
PR: Admission to Business doctoral program and ECO 6416 or equivalent; or consent of instructor. A foundation research course in business, exposing students to a full range of research experiences.
- ISM 5021 Introduction to Management Information Systems** 3 cr (3,0)
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 Systems Analysis and Development** 3 cr (3,0)
PR: MAN 5050 and graduate standing. Study and application of systems concepts for the improvement of organizational work and information systems.
- ISM 6305 Information Resources Management** 3 cr (3,0)
PR: ISM 5021, MAN 5050, MAN 5501 and graduate standing. An advanced study of information system management including system planning, project selection and management, and organizational information management policies.
- ISM 6395 Seminar: Management Information System** 3 cr (3,0)
PR: ISM 6305, ISM 6121 and graduate standing. This seminar covers theoretical foundations and current research directions in Management Information Systems. Topics include organizational and managerial processing; systems design, development and implementation.
- MAN 5050 Management Concepts** 2 cr (2,0)
PR: Acceptance into the graduate program. Theory and practice of managing organizations to include planning, organizational theory, human behavior and control.
- MAN 5501 Introduction to Production/Operations Management** 2 cr (2,0)
PR: Acceptance into the graduate program and ECO 5415 or equivalent. Introduction to the fundamental concepts, processes and institutions involved in the production of goods and services required by modern society.
- MAN 6055 Planning and Control Analysis** 3 cr (3,0)
PR: Graduate standing and MAN 5050 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.
- MAN 6075 History of Management Thought** 3 cr (3,0)
PR: Graduate standing and MAN 5050. The historical development of management in modern society with emphasis on the interrelationship between the management processes and the economic, social, and political environments.
- MAN 6121 Group Decisions and Analysis** 3 cr (3,0)
PR: Graduate standing and MAN 5050 or equivalent. Experience in company-wide management decision making by groups using the management game techniques. Analysis of the group decision-making process using video tapes.
- MAN 6158 Human Resources Management Issues** 3 cr (3,0)
PR: MAN 6156 or C.I. A course providing advanced study in selected topics of current interest in Human Resource Management.
- MAN 6245 Organizational Behavior and Development** 3 cr (3,0)
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 6305 Personnel Resources Administration** 3 cr (3,0)
PR: Graduate standing. A seminar in integrating the personnel, manpower planning, and labor relations fields through the study of concepts and problems in these areas.
- MAN 6547 Expert Systems for Business Application** 3 cr (3,0)
PR: C.I. if non-Business student. An introduction and application of the fundamentals of artificial intelligence (AI) knowledge-based expert systems technology to problem solution needs of business and other disciplines.

- MAN 6565 Production/Operations Analysis** 3 cr (3,0)
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 Business Policy and Responsibility** 3 cr (3,0)
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 6546 Quantitative Models for Business Decisions** 3 cr (3,0)
PR: Graduate standing and ECO 5413 or equivalent. Quantitative techniques useful for the solution of business problems. Mathematical model building to aid the decision making process is stressed.
- MAN 6515 Research and Development Management** 3 cr (3,0)
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.
- MAR 5055 Marketing Concepts** 3 cr (3,0)
PR: Acceptance into the graduate program. Study of functions, institutions and basic marketing of goods in the U.S. economy.
- MAR 5941 Small Business Consulting** 3 cr (3,0)
PR: Graduate status, all foundation classes, FIN 6406, MAR 6816. Provides students opportunity to apply knowledge learned in the classroom to real business situations. Open to undergraduate majors in the College of Business Administration with approval of the department chair.
- MAR 6077 Contemporary Marketing Problems** 3 cr (3,0)
PR: Graduate standing, MAR 6816, or C.I. Analysis of contemporary marketing problems resulting from social, economic, and political developments.
- MAR 6406 Sales Management and Control** 3 cr (3,0)
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 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 Marketing Research Methods** 3 cr (3,0)
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 6666 Marketing Models**
PR: MAR 6816 & ECO 6416. This course provides a working knowledge and managerial perspective on a range of marketing models and their associated analytical techniques.
- MAR 6816 Marketing Policy** 3 cr (3,0)
PR: Graduate standing and MAR 5055 or equivalent. (Not open to undergraduate marketing majors.) Marketing policy formulation and decision making with respect to planning, pricing, promotion and distribution.
- MAR 6845 Services Marketing**
PR: MAR 5055 or equivalent or C.I. Marketing in services industries is the focus of study with particular emphasis on unique aspects of services marketing, the service marketing mix, and the implementation of service strategies.
- OMB 7565 Applied Statistical Business Decision Models** 3 cr (3,0)
PR: Admission to Business doctoral program; ECO 6416 or equivalent; or consent of instructor. Logic and procedures used in research and data evaluation in the business sciences applying advanced statistical models to decision-making problems.
- REE 6306 Corporate Real Estate Investment Decision-Making** 3 cr (3,0)
PR: Acceptance into the graduate program and FIN 5405 or equivalent. Study of the theory and practice of location, acquisition, management and disposition of corporate real estate assets.

REE 6308 Corporate Real Estate Development 3 cr (3,0)

PR: Graduate Standing and REE 6306. Real estate decision making in the private sector utilizing tools of financial economic analysts.

RMI 6008 Risk Management 3 cr (3,0)

PR: Acceptance into the graduate program and FIN 5405 or equivalent. An introduction to risk management with emphasis on the business firm, but also treating several major risk management issues in the public sector.

TAX 5015 Federal Income Tax II 3 cr (3,0)

PR: ACG 4123, TAX 4001 and meet School admission requirements. Concepts and methods of determining taxable income for partnerships and corporations and selected topics.

TAX 6065 Seminar in Tax Research 3 cr (3,0)

PR: Graduate standing and all foundation courses for the accounting program or equivalents. Advanced study of and research in tax law. Procedures governing tax controversies and tax compliance.

TAX 6135 Seminar in the Taxation of Corporations and Shareholders 3 cr (3,0)

PR: TAX 5015 and graduate standing and all foundation courses for the accounting program. Federal taxation relating to corporate organization, distributions, liquidations, accumulations and reorganizations.

TAX 6205 Seminar in the Taxation of Partnership Income 3 cr (3,0)

PR: TAX 5015 and graduate standing and all foundation courses for the accounting program. Federal taxation relating to partnership income including formation, distributions and retirements.

TAX 6405 Seminar in the Taxation of Estates, Gifts and Trusts 3 cr (3,0)

PR: TAX 5015 and graduate standing and all foundation courses for the accounting program. Federal and Florida estate and inheritance taxes; taxation of gifts and trusts.

TAX 6845 Seminar in Tax Planning 3 cr (3,0)

PR: TAX 5015 and 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 6971 Thesis 1-6 cr

TAX 7066 Seminar in Doctoral Tax Research 3 cr (3,0)

PR: Admission to doctoral program, ACG 7157, and C.I. A review and critical analysis of tax research literature, with emphasis on emerging issues, methodology, and data gathering.

COLLEGE OF EDUCATION

Advanced courses through the College of Education are for students with at least baccalaureate degrees. Both degree and non-degree programs may be planned for people in education-related positions in social and government agencies, business and industry, as well as for professional educators in private and public schools. Master of Education and Master of Arts degrees are awarded. Educational Specialist and Doctor of Education degrees are available in Educational Leadership and Curriculum/Instruction. Programs in the College of Education are accredited by NCATE (The National Council for the Accreditation of Teacher Education).

COLLEGE ADMINISTRATION

TBA	Dean
M. A. Lynn	Associate Dean
T. Blair	Assistant Dean
M. A. Lynn	Graduate Program Coordinator
Office: ED 328, Phone (407) 823-3382	

Faculty

B. B. Anderson, Ed.D.	Professor
D. J. Baumbach, Ed.D.	Professor
T. Blair, Ph.D.	Assistant Dean and Professor
W. C. Bozeman, Ph.D.	Chair, Department of Educational Services and Professor
D. K. Brumbaugh, Ed.D.	Professor
M. W. Churton, Ed.D.	Chair, Department of Exceptional and Physical Education and Professor
W. Clarke, Ed.D.	Professor
R. G. Cowgill, Ph.D.	Professor
C. D. Dziuban, Ph.D.	Professor
H. O. Hall, Ed.D.	Professor
D. E. Hernandez, Ed.D.	Professor
M. C. Hynes, Ph.D.	Professor
A. R. Joels, Ph.D.	Professor
W. H. Johnson, Ph.D.	Dean and Professor
D. R. Kirby, Ed.D.	Chair, Department of Instructional Programs and Professor
M. L. Kysilka, Ph.D.	Professor
R. Lange, Ph.D.	Professor
M. A. Lynn, Ed.D.	Associate Dean and Professor
P. C. Manning, Ed.D.	Professor
R. D. Martin, Ed.D.	Professor
D. J. Meador, Ph.D.	Professor
J. Midgett, Ed.D.	Professor
J. L. Olson, Ph.D.	Professor
M. J. Palmer, Ed.D.	Professor
F. D. Rohrer, Ph.D.	Professor
R. A. Rothberg, Ed.D.	Professor
R. A. Thompson, Ed.D.	Professor
J. H. Armstrong, Ed.D.	Associate Professor
R. A. Bailey, Ph.D.	Associate Professor
J. S. Beadle, Ph.D.	Associate Professor
K. L. Biraimah, Ph.D.	Associate Professor
D. M. Blume, Ed.D.	Associate Professor
R. M. Bollet, Ed.D.	Associate Professor
R. A. Cornell, Ed.D.	Associate Professor
A. Cross, Ph.D.	Associate Professor
L. Cross, Ph.D.	Associate Professor

R. L. Driscoll, Ed.D.	Associate Professor
G. R. Gergley	Associate Professor
D. W. Gurney, Ph.D.	Associate Professor
T. L. Harrow, Ph.D.	Associate Professor
S. L. Hiett, Ph.D.	Associate Professor
P. E. Higginbotham, Ed.D.	Associate Professor
L. C. Holt, Ed.D.	Associate Professor
M. H. Hopkins, Ph.D.	Associate Professor
L. R. Hudson, Ph.D.	Associate Professor
J. A. Miller, Ed.D.	Associate Professor
M. Miller, Ed.D.	Associate Professor
G. W. Orwig, Ed.D.	Associate Professor
R. F. Paugh, Ed.D.	Associate Professor
J. M. Platt, Ed.D.	Associate Professor
J. W. Powell, Ed.D.	Associate Professor
P. T. Sciortino, Ph.D.	Associate Professor
B. W. Siebert, Ph.D.	Associate Professor
S. E. Sorg, Ph.D.	Associate Professor
T. J. Sullivan, Ed.D.	Associate Professor
K. Williams, Ph.D.	Associate Professor
A. T. Wood, Ph.D.	Associate Professor
K. W. Allen, Ph.D.	Assistant Professor
C. R. Balado, Ed.D.	Assistant Professor
D. J. Camp, Ph.D.	Assistant Professor
E. A. Clark	Assistant Professor
J. W. Cornett, Ph.D.	Assistant Professor
R. M. Everett, Ph.D.	Assistant Professor
M. Hill, Ed.D.	Assistant Professor
V. W. Ikpa, Ph.D.	Assistant Professor
K. E. McGhee, Ph.D.	Assistant Professor
H. P. Martin, Ed.D.	Assistant Professor
K. Murray, Ph.D.	Assistant Professor
S. E. Ortiz, Ed.D.	Assistant Professor
G. Pawlas, Ph.D.	Assistant Professor
J. Ratliff, Ph.D.	Assistant Professor
K. H. Renner	Assistant Professor
TBA	Chair, Department of Educational Foundations

PROGRAMS IN EDUCATION

MASTER'S DEGREES

Art Education	Instructional Systems
Business Education	Mathematics Education
Counselor Education	Music Education
Educational Leadership	Physical Education
Educational Media	Reading Education
Elementary Education	Science Education
English Education	Social Science Education
Exceptional Child	Vocational Education

EDUCATIONAL SPECIALIST DEGREES

School Psychology
Educational Leadership
Curriculum and Instruction

DOCTOR OF EDUCATION DEGREES

Educational Leadership
Curriculum and Instruction

MASTER'S DEGREES

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 semester hours of undergraduate study and a minimum score of at least 840 on the verbal-quantitative sections of the GRE or 2) a GPA of less than 3.0 combined with a GRE of 1000 or above. In addition, a student seeking a Master of Education degree must show evidence that all course work has been completed for the basic bachelor's level State of Florida teaching certificate. Master of Arts programs, available in some specialties, may be planned without the student's having previously completed certification courses.

Provisional Admission

Students who fail to meet University admissions standards have the opportunity to apply for admission via the provisional category. To be considered for provisional admission, students must file an application for provisional status in the Education Records and Advisement Center. Department committees make recommendations to the College Graduate Standards and Curriculum Committee. The following criteria are applied in evaluating applications:

- a. Ranking of undergraduate grade point average
- b. Ranking of GRE score
- c. Contribution, current and projected, to the profession
- d. Number of years of professional experience
- e. Number of post-baccalaureate hours taken
- f. Grade point average on any post-baccalaureate work
- g. Recommendations by college faculty and other professionals

Provisional students who do not maintain a 3.0 GPA during their first nine hours of enrollment will be reverted to post-baccalaureate status.

Program of Study

Students are officially assigned formal academic advisors only upon admission to a College of Education graduate degree program. It is each student's responsibility to seek academic advisement and to finalize a program of study early in the degree program. Students are strongly advised to file a program of study within the first nine hours of their graduate study. The acceptability and application of post-baccalaureate/transfer hours toward a degree is contingent on the recommendation of the academic advisor and is approved only after a program of study has been officially filed through all University channels.

Academic advisors are not assigned to individuals admitted as post-baccalaureate students. Post-baccalaureate students may seek information and general advisement in the Education Records and Advisement Center.

Performance Standards

Minimum University-wide standards and regulations are applicable in addition to the specific College of Education requirements and regulations described in this section. In addition to the minimum University standard of maintaining a "B" (3.0 GPA) on all graduate work and earning no more than 6 hours of "C" work or unresolved "I" (incomplete) grades, College of Education students must maintain at least a "C" (2.0 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.

Comprehensive Examination

Prior to graduation, all students are required to successfully complete a written comprehensive examination which is planned and evaluated by each student's major department.

Failure on a comprehensive examination requires re-enrollment and re-examination during a subsequent semester.

Thesis/Research Report/Non-thesis Option

Master's degree students in Education, in consultation with advisors, may select one of three options: typically, thesis and research report options require a minimum of 33 semester hours while the non-thesis option requires a minimum of 36 hours.

MASTER'S DEGREE PROGRAMS IN EDUCATION

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

ART EDUCATION

Master of Education: Minimum hours required for M.Ed. 39/45

This program is designed to meet the expanded and deepening needs of the art teacher in the studio content areas, to examine contemporary problems in art education, review recent curriculum developments, study innovative developments, explore interdisciplinary concepts and become involved in research problems specific to the art teacher. This degree requires previous certification in art.

AREA A - CORE - 15 or 21 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development	3 hours
EDF	6886	Multicultural Education	3 hours

Select One Option:

Option A - Thesis - 6 SH

EDF	6401	Statistics for Educational Data	3 hours
ARE	6971	Thesis	2,1 hours

Option B - Non-Thesis - 12 SH

EDF	6259	Strategies of Classroom Management	3 hours
ESE	6234	Curriculum Design	3 hours
ARH	5451	Artistic Worldviews	3 hours
ARH	5478	Contemporary Women Artists	3 hours

AREA B - SPECIALIZATION - 18 SH

ARE	5251	Art for Exceptionalities	3 hours
ARE	6195	Teaching Art Appreciation	3 hours
ARE	6666	Art Education Advocacy	3 hours
ARE	5648	Contemporary Visual Arts Education	3 hours
ARE	6455	K-12 Art Instructional Materials I	3 hours

Select One (Thesis Option)

ART	5109C	Multicultural Crafts Design OR	
ARH	5451	Artistic Worldviews	3 hours

Non-Thesis Option

ART	5109C	Multicultural Crafts Design	3 hours
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AREA C - STUDIO - 6 SH

ART	4/5	One Studio Course	3 hours
ART	4/5	One Studio Course	3 hours

ART EDUCATION

Master of Arts: Minimum hours required for M.A. 53/56

The Master of Arts program in Art is planned to provide the art-oriented person with a degree which includes certification. The 53-hour program meets state certification requirements in foundations, special methods in art education, general methods in teaching and the student teaching component. An M.A. program in Art Education can be arranged for the student who is not interested in becoming certified to teach art, but wants preparation for museum work, art therapy, or becoming involved in life-long learning in art for adult education. Prerequisites depend on previous experience of the student.

AREA A - CORE - 19 or 22 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6155	Lifespan Human Development	3 hours
EDG	4321	Teaching Strategies	4 hours

Select One:

EDF	6608	Social Factors in American Education OR	
EDF	6517	History and Philosophy of American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ARE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH Electives Approved by Advisor

ARH	5451	Artistic Worldviews	3 hours
ARH	5478	Contemporary Women Artists	3 hours

AREA B - SPECIALIZATION - 38 SH

ARE	5251	Art for Exceptionalities	3 hours
ARE	6195	Teaching Art Appreciation	3 hours
ARE	6666	Art Education Advocacy	3 hours
ARE	5648	Contemporary Visual Arts Education	3 hours
ARE	6455	K-12 Art Instructional Materials I	3 hours
ART	5109C	Multicultural Crafts Design	3 hours

AREA C - STUDIO 6 SH

ART	4/5	One Studio Course	3 hours
ART	4/5	One Studio Course	3 hours

AREA D - INTERNSHIP - 10 SH

ARE	6946	Graduate Internship	3 hours
ARE	6946	Graduate Internship	7 hours

Corequisites:

ARE	4143	Methodology of Teaching K-12 Art Education I	2 hours
ARE	4144	Methodology of Teaching K-12 Art Education II	2 hours

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

COUNSELOR EDUCATION

This program has four program options. The Master of Education degree program is designed to meet the needs of students who have a baccalaureate degree and have completed course work for regular Florida State Teaching Certification and plan to work as a counselor in a school setting (elementary, middle, secondary, post-secondary). This degree requires a minimum of 48 semester hours.

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 the student desiring certification in guidance for the public school, K-12, at the master's level. This degree program requires a minimum of 57 semester hours.

The third option is a Master of Arts degree program in mental health counseling for the student who is not interested in working in a school setting but is interested in other counseling employment (e.g., mental health agencies, employment service, vocational rehabilitation, juvenile courts, etc.). This program is planned to meet State of Florida license standards. A minimum of 60 semester hours is required.

The fourth option is a Master of Arts degree program in Higher Education Student Personnel Services for the student who is interested in working on college and university campuses in divisions of student affairs.

EGC 6909 Research Report may be substituted by two three semester hour courses. All program tracks require an internship experience. Mental Health counseling requires 900 clock hours and all others, 600 clock hours.

Admissions criteria: For consideration for admission to *any* of the counselor education program tracks, an applicant must secure, complete and submit by the deadline (Oct. 1st for Spring Term Admission, May 1st for Fall Term Admission), a special packet of materials for review by a faculty admissions committee. This material is separate from the University Graduate Admissions Application and may be obtained from the Educational Services Department office (ED 318). A formal interview is required and will be considered for final admission after the College of Education admission requirements are met. This program can accommodate a limited number of students; therefore, there is a possibility of being denied admission even when all criteria are met.

Exit requirements include:

1. Achieve at least a GPA of 3.0 in counseling specialization courses.
2. Achieve a B or better in EGC 6446 and EGC 6946.
3. Must be approved by the faculty of the program of the student's major.
4. Satisfactory passing comprehensive written examinations which may be taken after 2/3 of course work is completed.

The College 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.

COUNSELOR EDUCATION: SCHOOL COUNSELING AND GUIDANCE

Master of Arts: Minimum hours required for M.A. 57/60

Master of Education: Minimum hours required for M.Ed. 48/51

AREA A - CORE - 9 or 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours

Select One Option:

Option A - Research Report - 3 SH

EGC	6909	Research Report	2,1 hours
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Option B - Non-Thesis - (6 SH Electives Approved by Advisor)

AREA B - SPECIALIZATION - 33 SH

EGC	5005	Introduction to the Counseling Profession	3 hours
EGC	6606	Organization and Administration of School Counseling and Guidance Programs	3 hours
EGC	6235	Procedures for Group Testing	3 hours
EGC	6317	Career Development	3 hours
EGC	6435	Theories of Individual Counseling	3 hours
EGC	6436	Techniques of Counseling	3 hours
EGC	6045	Counseling with Children and Adolescents	3 hours
EGC	6505	Group Procedures and Theories in Counseling	3 hours
EGC	6706	Consultation, Staffing and Case Management	3 hours
EGC	6785	Ethical and Legal Issues	3 hours
EGC	6463	Counseling Special Populations	3 hours

AREA C - FIELD EXPERIENCE - 3 SH

EGC	6446	Counseling Practicum	3 hours
EGC	6946	Counseling Internship	3 hours

Corequisites: 9 SH required for M.A. for Initial Certification

EDF	6517	History and Philosophy of American Education or	3 hours
EDF	6608	Social Factors in American Education	3 hours

Elective Choices - Minimum Required - 6 SH

EDA	6061	Organization and Administration of Schools	3 hours
EDA	6123	Educational Supervisory Practices I	3 hours

EDA	6130	Educational Supervisory Practices II	3 hours
EDG	4324	Teaching in the Schools	3 hours
EDG	4321	Teaching Strategies	4 hours
EDE	6205	Elementary School Curriculum	3 hours
EME	5051	Technologies of Instruction and Information Management	3 hours
ESE	6235	Curriculum Design	3 hours
ESE	6325	Curriculum Theory	3 hours

Courses must be taken in the following sequence:

EGC 5005, 6435, 6436, 6505, 6446, 6946

This program prepares students for Florida Certification in Counseling and Guidance.

COUNSELOR EDUCATION: MENTAL HEALTH COUNSELING

Master of Arts: Minimum hours required for M.A. 60/63

AREA A - CORE - 9 or 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development	3 hours

Select One Option:

Option A - Research Report - 3 SH

EGC	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH Electives Approved by Advisor

AREA B - SPECIALIZATION - 36 SH

EGC	5005	Introduction to Counseling Profession	3 hours
EGC	6426	Mental Health Care Systems	3 hours
CLP	5166	Advanced Abnormal Psychology	3 hours
EGC	6317	Career Development	3 hours
EGC	6435	Theories of Individual Counseling	3 hours
EGC	6436	Techniques of Counseling	3 hours
EGC	6505	Group Procedures and Theories in Counseling	3 hours
EGC	6215	Individual Psycho-Educational Testing I	3 hours
EGC	6728	Human Sexuality Relationships	3 hours
EGC	6785	Ethical Legal Issues	3 hours
PPE	5505	Personality Theories	3 hours
EGC	6706	Consultation, Staffing and Case Management	3 hours

AREA C - COGNATE ELECTIVES - 6/12 SH

EGC	6515	Advanced Group Counseling	3 hours
EGC	6463	Counseling Special Populations	3 hours
EGC	6467	Counseling Older Persons and Their Families	3 hours
EGC	6414	Family Counseling I	3 hours
EGC	6415	Family Counseling II	3 hours
EGC	6461	Counseling Substance Use Abuse	3 hours
EGC	6409	Current Trends in Counseling	3 hours
EGC	6045	Counseling with Children and Adolescents	3 hours

AREA D - FIELD EXPERIENCES - 9 SH

EGC	6446	Counseling Practicum I	3 hours
EGC	6446	Counseling Practicum II	3 hours
EGC	6946	Counseling Internship	3 hours

Courses must be taken in the following sequence:

EGC 5005, 6435, 6436, 6446, 6505, 6446, 6946.

This program prepares students for Florida licensure in Mental Health Counseling.

COUNSELOR EDUCATION: HIGHER EDUCATION STUDENT PERSONNEL

Master of Arts: Minimum hours required for M.A. 48/51

AREA A - CORE - 9 or 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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Select One Option:

Option A - Research Report - 6 SH

EDF	6401	Statistics for Educational Data OR	
EDH	6065	History and Philosophy of Higher Education	3 hours
EGC	6909	Research Report	2,1 hours

Option B - Non-Thesis - 9 SH - 3 SH Elective Approved by Advisor

EDF	6401	Statistics for Educational Data	3 hours
EDH	6065	History and Philosophy of Higher Education	3 hours

AREA B - SPECIALIZATION - 24 SH

EGC	6055	Student Personnel Services in Higher Education	3 hours
EGC	6057	College Community Student	3 hours
EDA	6540	Organization and Administration of Higher Education	3 hours
EDH	6505	Finance in Higher Education	3 hours
EGC	6785	Ethical and Legal Issues	3 hours
EGC	6317	Career Development	3 hours
EGC	6435	Theories of Individual Counseling	3 hours
EGC	6436	Techniques of Counseling	3 hours

AREA C - ELECTIVES - 6 or 9 SH

EGC	5005	Introduction to the Counseling Profession	3 hours
EGC	6505	Group Procedures and Theories in Counseling	3 hours
EGC	6461	Counseling Substance Use Abuse	3 hours
EGC	6728	Human Sexuality Relationships	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
EDA	7195	Politics, Governance and Financing of Educational Organizations	4 hours
EGC	6409	Current Trends in Counseling	3 hours

AREA D - PROFESSIONAL FIELD EXPERIENCE - 9 SH

EGC	6446	Counseling Practicum	3 hours
EGC	6446	Student Affairs Practicum	3 hours
EGC	6946	Student Affairs Internship	3 hours

Option B: Student Affairs Emphasis

EGC	6446	Counseling Practicum	3 hours
EGC	6446	Student Affairs Practicum	3 hours
EGC	6946	Student Affairs Internship	3 hours

Courses must be taken in the following sequence:

EGC 6055, 6435, 6436, 6446, 6505, 6446, 6946.

EDUCATIONAL LEADERSHIP

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 M.A. option does not fulfill state certification requirements and requires 42 hours for completion.

The purpose of the Master of Education Degree (M.Ed.) in Educational Leadership is to prepare individuals for leadership positions and administrative careers in education. The M.Ed. Degree provides for two options:

Option I. Educational Leadership is a 39-semester hour program of study applicable toward Florida Educational Leadership Certification which is designed to provide the theoretical and conceptual knowledge base required for the 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. Three years of teaching

experience and the Florida Educational Leadership Examination are required by the State of Florida for certification in Educational Leadership.

Option II. Curriculum and Instruction is a 33-hour program of study designed to prepare classroom teachers who wish to remain in the classroom as teachers, team leaders, departmental chairpersons, peer teachers or curriculum resource teachers.

EDUCATIONAL LEADERSHIP

Master of Education: Minimum hours required for M.Ed. 39

AREA A - CORE - 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One:

EDF	6155	Lifespan Human Development	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Non-Thesis Option:

EDA	6946	Graduate Internship**	2,1 hours
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AREA B - SPECIALIZATION - 21 SH

EDA	6061	Organization and Administration of Schools	3 hours
EDA	6502	Organization and Administration of Instructional Programs	3 hours
EDA	6232	Legal Aspects of School Operation	3 hours
EDA	6260	Educational Systems Planning and Management	3 hours
EDA	6240	Educational Financial Affairs	3 hours
EDS	6123	Educational Supervisory Practices I	3 hours
EDS	6130	Educational Supervisory Practices II	3 hours

AREA C - PROGRAM EMPHASIS - 6 SH

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

*Both Curriculum courses must be taken at one level. The level must be indicated on the program.

**Students who wish to substitute a thesis must take EDF 6401 and see their advisor for approval.

EDUCATIONAL LEADERSHIP

Master of Arts: Minimum hours required for M.A. 42

AREA A - CORE - 15 SH

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

AREA B - SPECIALIZATION - 9 SH (Electives Approved by Advisor)

AREA C - ADMINISTRATION - 18 SH

EDA	6061	Organization and Administration of Schools (required)	3 hours
EDA	6502	Organization and Administration of Instructional Programs (required)	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	6946	Internship (required)	3 hours
EDA	6123	Educational Supervisory Practices I OR	3 hours
EDA	6130	Educational Supervisory Practices II	3 hours

EDUCATIONAL LEADERSHIP: Curriculum and Instruction

Master of Education: Minimum hours required for M.Ed. 33/36

AREA A - CORE - 18 or 21 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6236	Principles of Instruction and Learning	3 hours
EDG	6223	Curriculum Theory and Organization	3 hours
EDF	6517	History and Philosophy of American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

EDG	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH Electives Approved by Advisor

AREA B - SPECIALIZATION - 12 SH

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

AREA C - 3 SH Elective Approved by Advisor

ELEMENTARY EDUCATION

Master of Education: Minimum hours required for M.Ed. 33

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 finding and instructional trends in basic subject matter areas, and elective choices in specific areas.

AREA A - CORE - 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6236	Principles of Instruction and Learning	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours

Select One Option:

Option A

EDF	6401	Statistics for Educational Data	3 hours
EDF	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 SH

EDE	6938	Elementary Education Seminar	2,1 hours
SCE	6616	Trends in Elementary School Science Education	3 hours
SSE	6617	Trends in Elementary School Social Studies Education	3 hours

Select One:

RED	6116	Trends in Reading Education	3 hours
LAE	6616	Trends in Language Arts Education	3 hours

Select One:

LAE	5415	Children's Literature Elementary Education (If no previous Children's Literature)	3 hours
LAE	6714	Investigation in Children's Literature	3 hours
MUE	5611	Trends in Elementary School Music Education	3 hours
MUE	5	Trends in Arts Education	3 hours

Select One:

MAE	6641	Problem Solving and Critical Thinking Skills	3 hours
MAE	6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher	3 hours

ELEMENTARY EDUCATION: EARLY CHILDHOOD

Master of Education: Minimum hours required for M.Ed.. 36/39

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

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours

Select One Option:

Option A - Research Project OR Thesis - 6 SH

EDF	6401	Statistics for Educational Data	3 hours
EDE	6971	Thesis OR	2,1 hours
EDE	6909	Research Report	2,1 hours

Option B - Non-Thesis - 9 SH (6 SH Electives Approved by Advisor)

EDF	6886	Multicultural Education	3 hours
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AREA B - SPECIALIZATION - 24 SH

EED	6	Guiding & Facilitating Social Competence	3 hours
EEC	5205	Programs in Early Childhood Education	3 hours
EEC	5206	Organization of Instruction in Early Childhood Education	3 hours
EEX	6	Typical/Atypical Applied Child Development	3 hours
EEC	6	Play Development Intervention & Assessment	3 hours
EEX	6	Parenting Families	3 hours
EEX	6	Observation Assessment	3 hours

ELEMENTARY EDUCATION - MATHEMATICS EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

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

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

AREA A - CORE 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One Option:

EDF	6155	Lifespan Human Development	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

MAE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - (6 SH Electives Approved by Advisor)			3 hours
AREA B - SPECIALIZATION - 12 SH			3 hours
MAE 4634	Programs in Teaching Mathematics		3 hours
MAE 6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher		3 hours
MAE 6899	Seminar in Teaching Mathematics		3 hours
MAE 6946	Practicum		3 hours
AREA C - ELECTIVES - 9 SH Approved by Advisor			
MAE 5318	Current Methods in Elementary School Mathematics		3 hours
MAE 6145	Mathematics Curriculum, K-12		3 hours
MAE 6641	Problem Solving and Critical Thinking Skills in Mathematics, K-12		3 hours

This program is not approved for automatic certification by the State of Florida. To be certified as an elementary mathematics specialist, a person must have a minimum of 18 semester hours in mathematics.

ELEMENTARY EDUCATION - PREVIOUSLY CERTIFIED 6-12 or K-12

Master of Arts: Minimum hours required for M.A. 42/45

A program for students previously certified as a Secondary Teacher or as a K-12 Teacher who wish to be certified in Elementary Education:

AREA A - CORE - 15 SH

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6886	Multicultural Education	3 hours
EDF 6155	Lifespan Human Development and Learning	3 hours

Select One Option A, B, or C:

Option A - Thesis Option- 6 SH

EDF 6401	Statistics for Educational Data	3 hours
EDE 6971	Thesis	2,1 hours

Option B - Research Report - 6 SH

EDF 6259	Strategies of Classroom Management	3 hours
EGC 6909	Research Report	2,1 hours

Option C - Non-Thesis - 9 SH (6 SH Electives Approved by Advisor)

EDF 6259	Strategies of Classroom Management	3 hours
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AREA B - SPECIALIZATION - 24 SH

LAE 5319	Methods of Elementary School Language Arts	3 hours
LAE 5415	Children's Literature Elementary Education	3 hours
MAE 5318	Current methods in Elementary School Math	3 hours
RED 5147	Developmental Reading	3 hours
RED 5514	Classroom Diagnosis and Development of Reading Proficiencies (PR: RED 5147)	3 hours
SCE 5716	Methods of Elementary School Science	3 hours
SSE 5113	Methods of Elementary School Social Science	3 hours
EDE 6938	Elementary Education Seminar	2,1 hours

Corequisites:

MUE 3210	Music in Elementary Schools	3 hours
ARE 4313	Art in Elementary Schools	3 hours
HLP 4722*	Teaching Elementary School Health/Physical Education	3 hours
EDE 6946**	Graduate Internship	3 hours
EDE 5541***	Individualizing Instruction in the Elementary School	3 hours

*If HLP 4722 is waived due to previous coursework, EDE 4937 Drug Abuse Education must be taken if it was not included in the course.

**Student should discuss any previous teaching experience with the advisor to determine the need for an elementary internship.

***If the previously earned 6 SH of general methods credit concerned only secondary education, one course for elementary is required.

ELEMENTARY EDUCATION - PROGRAM FOR NON-EDUCATION MAJORS

Master of Arts: Minimum hours required for M.A. 36/62

A minimum requirement for this degree would be 36 hours. However, depending upon the student's background, the program could be extended to 62 hours. This program provides for professional and specialization preparation and certification in Elementary Education as shown below:

AREA A - CORE - 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6155	Lifespan Human Development	3 hours
EDG	4321	Teaching Strategies	4 hours

Select One Option:

EDF	6608	Social Factors in American Education OR	3 hours
EDF	6517	History and Philosophy of American Education	3 hours

AREA B - SPECIALIZATION - 15 SH

LAE	5319	Methods of Elementary School Language Arts	3 hours
MAE	5318	Methods of Elementary School Math	3 hours
SCE	5716	Methods of Elementary School Science	3 hours
RED	5147	Developmental Reading	3 hours
RED	5514	Classroom Diagnosis and Development of Reading Proficiencies (PR: RED 5147)	3 hours

AREA C - NON-THESIS OPTION - 6 SH

LAE	5415	Children's Literature in Elementary Education	3 hours
SSE	5113	Methods of Elementary School Social Science	3 hours

AREA D - SEMINAR/INTERNSHIP - 13 SH

EDE	6938	Elementary Education Seminar	2,1 hours
EDE	6946	Graduate Internship	3 hours
EDE	6946	Graduate Internship	7 hours

Corequisites:

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

ENGLISH LANGUAGE ARTS EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

This program is designed to meet the advanced knowledge and skill needs of the English classroom teacher.

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data OR	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One:

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 21 SH

LAE	4342	Teaching Language Composition	3 hours
LAE	6467	Studies in Adolescent Literature	3 hours
LAE	6637	Research in Teaching	3 hours

Electives - 15 SH (Approved by Advisor)

15 hours

ENGLISH LANGUAGE ARTS EDUCATION

Master of Arts: Minimum hours required for M.A. 41/44

A secondary (6-12) program for non-education majors, or previously certified teachers in another field.

AREA A - CORE - 19 or 21 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
ESE	6235	Curriculum Design	3 hours
EDG	4321	Teaching Strategies	4 hours
EDF	6517	History and Philosophy of American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis Option - 6 SH (6 SH Electives Approved by Advisor)

Elective	3 hours
Elective	3 hours

AREA B - SPECIALIZATION - 12 SH (Electives Approved by Advisor)

LAE	6467	Studies in Adolescent Literature	3 hours
LAE	4932	Teaching Language Composition	3 hours
LAE	6637	Research in Teaching	3 hours

AREA C - INTERNSHIP - 10 SH

ESE	6946	Graduate Internship	3 hours
ESE	6946	Graduate Internship	7 hours

Corequisites:

LAE	3335	English Instructional Analysis	4 hours
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EXCEPTIONAL CHILD EDUCATION

Two master's degree programs are offered in Exceptional Child Education—the Master of Education (M.Ed.) and the Master of Arts Degree (M.A.).

The Master of Education M.Ed. degree provides for specialization in one of three areas:

- EH: Emotionally Handicapped (M.Ed.)** - Inability to achieve adequate academic progress or satisfactory interpersonal relationships not attributed primarily to physical, sensory or intellectual deficits.
- EMH: Educable Mentally Handicapped (M.Ed.)** - Significant impairment in general intellectual functioning concurrent with deficits in adaptive behavior which are manifested during the development period.
- SLD: Specific Learning Disability (M.Ed.)** - Disorder in one or more of the basic psychological processes involved in understanding or in using spoken and written language; learning problems not due primarily to other handicapping conditions.

Master of Education: Minimum hours required for M.Ed. 33*

AREA A - CORE - 12 SH

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

AREA B - SPECIALIZATION - 3 SH

Select the appropriate course for existing certification field:

ELD	6323	Theory and Application for SLD	3 hours
EMR	6205	Theory and Application for EMH	3 hours
EED	6226	Theory and Application fo EH	3 hours

AREA C - CURRICULUM - 18 SH

EEX	6612	Methods of Behavioral Management	3 hours
EEX	6107	Teaching Spoken and Written Language	3 hours
EEX	6342	Seminar-Critical Issues in Special Education	3 hours
EEX	6257	Assessment & Curriculum Prescriptions for the Exceptional Population	3 hours

Select One:

EPH	5335	Physical and Sociological Implications of Handicapping Conditions	3 hours
EEX	6257	Exceptional Adolescents	3 hours

Select One:

EEX	6946	Clinical Practicum OR	3 hours
		Electives Approved by Advisor	3 hours

*Professional Certification in SLD, MH or EH required to enter this program.

*Students are not being accepted into this program at the present time.

EXCEPTIONAL CHILD EDUCATION: VARYING EXCEPTIONALITIES**Master of Arts: Minimum hours required for M.A. 33/39**

A program for non-education undergraduates. The varying exceptionalities option leads to certification (VE, SLD, MH, EH) and prepares graduates to teach in these areas of exceptionality. There are no prerequisites to admission but graduates must be certifiable by the completion of the degree program.

AREA A - CORE - 9 - 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One Option:

Option A - Thesis - 3 SH

EEX	6971	Thesis	2,1 hours
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Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 24-27 SH

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

Corequisites: Prescribed by College of Education to meet State Certification requirements or as support for degree program. Waiver/substitutions for corequisites must meet departmental standards and be approved by the Chair of the department.

RED	5147	Developmental Reading	3 hours
MAE	5318	Current Methods of Elementary Math	3 hours
EDF	3603	Analysis of Educational Foundations	3 hours
EDF	4214	Classroom Learning Principles	3 hours
EDG	4321	Teaching Strategies	4 hours

INSTRUCTIONAL TECHNOLOGY/EDUCATIONAL MEDIA

NOTE: The programs 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).

INSTRUCTIONAL TECHNOLOGY/MEDIA: EDUCATIONAL MEDIA

Master of Education: Minimum hours required for M.Ed. 39/45

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 assumption is made within the Educational Media program that the applicant holds a teaching certificate currently valid in the State of Florida prior to entry into the program and at least one year of successful classroom experience.

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6401	Statistics for Educational Data OR	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Option A - Research Report - 3 SH

EME	6909	Research Report	2,1 hours
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Option B - Non-Thesis Option - 6 SH

EME	6062	Research in Instructional Technology	3 hours
EME		Elective	3 hours

AREA B - SPECIALIZATION - 24 SH

EME	5208	Production Techniques for Instructional Settings	3 hours
EME	5051	Techniques of Instruction & Information Management	3 hours
EME	5225	Media for Children and Young Adults	3 hours
EME	6605	Role of the Media Specialist in Curriculum and Instruction	3 hours
EME	6805	Organization of Media and Information	3 hours
EME	6105	Collection Development Policies and Procedures	3 hours
EME	6807	Information Sources and Services	3 hours
EME	6706	Administrative Principles in Media Centers	3 hours

AREA C - ELECTIVE - 3 SH

EME	6209	Advanced Production	3 hours
EME	6053	Current Trends in Instructional Technology	3 hours
EME	6403	Computer Assisted Instruction	3 hours
EME	6809	Information Retrieval Systems	3 hours
EME	5408	Computer Applications in Instructional Technology	3 hours
EME	6613	Instructional Systems Design	3 hours
EME	6313	Media Systems Design	3 hours
LAE	4464	Literature for Adolescents	3 hours
LAE	5415	Children's Literature in Elementary Education	3 hours

AREA D - INTERNSHIP - 3 SH

EME	6946	Graduate Internship	3 hours
		(Required if no media center experience)	

INSTRUCTIONAL TECHNOLOGY/MEDIA: EDUCATIONAL MEDIA

Master of Arts: Minimum hours required for M.A. 56

Program for non-education majors or teachers previously certified in another field.

AREA A - CORE - 22 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6608	Social Factors in American Education OR	3 hours
EDF	6571	History and Philosophy of American Education	3 hours
EDG	4324	Teaching in the Schools	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
EDG	4321	Teaching Strategies	3 hours

Non-Thesis Option - 6 SH (3 SH Elective Approved by Advisor)			
EME	6062	Research in Instructional Technology	3 hours
EME	6209	Advanced Production Techniques OR	3 hours
EME	6809	Information Retrieval Systems OR	3 hours
EME		Elective	3 hours
AREA B - SPECIALIZATION - 24 SH			
EME	5208	Production Techniques for Instructional Settings	3 hours
EME	5051	Techniques of Instruction & Information Management	3 hours
EME	5225	Media for Children and Young Adults	3 hours
EME	6605	Role of the Media Specialist in Curriculum and Instruction	3 hours
EME	6805	Organization of Media and Information	3 hours
EME	6105	Collection Development Policies & Procedures	3 hours
EME	6807	Information Sources and Services	3 hours
EME	6706	Administrative Principles in Media Centers	3 hours
AREA C - INTERNSHIP - 10 SH			
EME	6946	Graduate Internship	3 hours
EME	6946	Graduate Internship	7 hours
Corequisite Required for Certification			
LAE	5415	Children's Literature in Elementary Education OR	3 hours
LAE	4464	Literature for Adolescents	3 hours
Final Program of Study Contingent upon approval of Department of Education			

INSTRUCTIONAL TECHNOLOGY/MEDIA: INSTRUCTIONAL SYSTEMS

Master of Arts: Minimum hours required for M.A. 39/42

This program leads to a Master of Arts degree and is designed for those who wish to work in business, industry, government, or other settings where training takes place. Instructional technologists analyze training problems and requirements; design, develop, evaluate, and manage instructional programs.

AREA A - CORE - 6 or 9 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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Select One Option:

Option A - 3 SH

EME	6909	Research Report	2,1 hours
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Option B - 6 SH (3 SH Elective Approved by Advisor)

EME	6062	Research in Instructional Technology	3 hours
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AREA B - SPECIALIZATION - 24 SH

EME	5056	Communication for Instructional Systems - Process	3 hours
EME	5057	Communication for Instructional Systems - Finish	3 hours
EME	5054	Instructional Systems Survey of Applications	3 hours
EME	5408	Computer Applications in Instructional Technology	3 hours
EME	6613	Instructional Systems Design	3 hours
EME	6313	Media Systems Design	3 hours
EME	6705	Administration of Instructional Systems	3 hours
EME	6946	Graduate Internship in Instructional Systems OR	3 hours
COE	6949	Cooperative Education	

AREA C - ELECTIVE - 9 SH (COURSES NOT LISTED BELOW REQUIRE ADVISOR APPROVAL)

EME	6209	Advanced Production	3 hours
EME	6053	Current Trends in Instructional Technology	3 hours
EME	6403	Computer Assisted Instruction	3 hours
EME	6809	Information Retrieval Systems	3 hours
EME	6455	Instructional Applications of Interactive Video	3 hours
INP	6317	Organizational Psychology and Motivation	3 hours
EIN	5255	Training Simulator Engineering	3 hours

MATHEMATICS EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

This program is designed to meet the advanced knowledge and skill needs of the mathematics classroom teacher.

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
Select One:			
EDF	6401	Statistics for Educational Data	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
Select One:			
EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

MAE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (6 SH Electives Approved by Advisor)

AREA B - SPECIALIZATION - 6 SH (6 SH ELECTIVES APPROVED BY ADVISOR)

6 hours

AREA C - CURRICULUM CORE - 15 SH

MAE	4634	Laboratory Programs in Mathematics (Required)	3 hours
MAE	6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher (Required)	3 hours
MAE	6899	Seminar in Teaching Mathematics (Required)	3 hours
Select Two Courses:			
EME	5208	Media Methods	3 hours
ESE	6235	Curriculum Design	3 hours
MAE	6145	Mathematics Curriculum K-12	3 hours
MAE	6648	Design in Instructional Comprehension	3 hours
MAE	6549	Practicum in Mathematics Instruction, K-12	3 hours
MAE	6641	Problem Solving and Critical Thinking Skills in Mathematics, K-12	3 hours

MATHEMATICS EDUCATION

Master of Arts: Minimum hours required for M.A. 40/43

Program for non-education majors, or previously certified teachers in another field.

AREA A - CORE - 18 or 21 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
ESE	6235	Curriculum Design	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6517	History and Philosophy of American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 12 SH (ELECTIVES APPROVED BY ADVISOR)

12 hours

AREA C - INTERNSHIP - 10 SH

ESE	6946	Graduate Internship	3 hours
ESE	6946	Graduate Internship	7 hours

Corequisites: Students must have required mathematics coursework to meet

30 SH rule.			
MAE	3330	Math Instructional Analysis	4 hours

MUSIC EDUCATION

Master of Education: Minimum hours required for M.Ed. 36/39

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

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data OR	
EDF	6432	Measurement and Evaluation in Education	3 hours

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:

Option A - Research Report - 3 SH

MUE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - (6 SH Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 12 SH

MUG	4102	Advanced Conducting	1 hours
MUH	4340	Seminar: "Period" course in Music History	3 hours
MUT	5325	Arranging and Composing Music	3 hours
MV*	5251	Applied Music Principal or Secondary	(1,1)

*Full prefix will be determined by the instrument on which student performs.

AREA C - CURRICULUM — 12 SH**

MUE	6155	Teaching Performance	3 hours
MUE	6349	Advanced General Music	3 hours
MUE	6946	Practicum in Music Education	3 hours
MUE		Directed Elective	3 hours

**Graduate performance and advanced conducting courses are available only after admission to the graduate program and successful completion of 9 semester hours of the graduate program.

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

MUH	4218	Review of Music History	1 hour
MUH	4031	Review of Music Theory	1 hour
MUT	4275	Review of Sight-Singing and Ear Training	2 hours

MUSIC EDUCATION

Master of Arts: Minimum hours required for M.A. 37/40

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 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
EDG	4321	Teaching Strategies	4 hours

Select One:

EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

MUE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - (6 SH Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 11 SH*

MUE	4311	Elementary School Music Instructional Analysis	2 hours
MUE	6349	Advanced General Music	3 hours
MUE	6155	Teaching Performing Organizations	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 SH of the graduate program.

AREA C - INTERNSHIP - 10 SH

MUE	6946	Graduate Internship (or equivalent)	3 hours
MUE	6946	Graduate Internship	7 hours

Corequisites - Music specialization requirements must be met by either a BA in Music or additional coursework to be determined by Advisor.

EDG	4324	Teaching in Schools	3 hours
MUE	4360	Secondary School Music Instructional Analysis	2 hours

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

MUH	4218	Review Music History	1 hour
MUT	4031	Review Music Theory	1 hour
MUT	4275	Sight Singing and Ear Training	2 hours

PHYSICAL EDUCATION

The Physical Education program offers a Master of Education degree (M.Ed.) and a Master of Arts degree (M.A.) with specializations in various aspects of physical education.

The M.Ed. degree is sufficiently flexible to meet a range of student needs in improving proficiency and competencies in teaching, curriculum, research design, administrative techniques and physical education for exceptional students. The degree provides for three separate options: The Adapted Physical Education option seeks to train qualified adapted physical education specialists, to serve special education students in regular classrooms. The Master Teacher option is designed to prepare master teachers for all students grades 6-12. The Perceptual Motor Development option focuses on the preparation of physical education teachers to work with exceptional children in the 0-9 age group.

PHYSICAL EDUCATION: ADAPTED PHYSICAL EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours

Select One Option:

Option A - Thesis - 3 SH

PET	6971	Thesis	3 hours
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Option B - Non-Thesis - 6 SH

PET	6238C	Perceptual Motor Development	3 hours
		Elective	3 hours

AREA B - SPECIALIZATION - 21 SH

PET	6946	Practicum	3 hours
EEX	5051	Exceptional Children in Schools	3 hours
PET	6615	Psychomotor Assessment of Exceptional Children	2 hours
PET	6646	Methods & Curriculum in Adapted Physical Education	4 hours
PET	6655	Developmental Aspects of Motor Disabilities	3 hours
PET	6238C	Perceptual Motor Development	3 hours
PET	6910	Problem Analysis - Review of Literature	3 hours

PHYSICAL EDUCATION: MASTER TEACHER**Master of Education: Minimum hours required for M.Ed. 34/37****AREA A - CORE - 12 or 15 SH**

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One Option:

Option A - Thesis - 3 SH

PET	6971	Thesis	2,1 hours
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Option B - Non-Thesis - 6 SH

PET	6386C	Environmental Exercise Physiology	3 hours
PET	6238C	Perceptual Motor Development	3 hours

AREA B - SPECIALIZATION - 22 SH

EEX	5051	Exceptional Children in Schools	3 hours
PET	6615	Psychomotor Assessment of Exceptional Children	3 hours
PET	6646	Methods and Curriculum in Adapted Physical Education	4 hours
PET	6655	Developmental Aspects of Motor Disabilities	3 hours
PET	6910	Problem Analysis - Review of Literature	3 hours
PET	6425	Curriculum Design in Physical Education	3 hours
PET	6146	Current Trends and Philosophical Foundations of P.E.	3 hours

PHYSICAL EDUCATION: PERCEPTUAL MOTOR DEVELOPMENT**Master of Education: Minimum hours required for M.Ed. 33/36****AREA A - CORE - 12 or 15 SH**

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours

Select One Option:

Option A - Thesis - 3 SH

PET	6971	Thesis	2,1 hours
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Option B - Non-Thesis - 6 SH

PET	6088	Wellness Development for Children	3 hours
PET	6645	Advanced Studies in Adapted Physical Education	3 hours

AREA B - SPECIALIZATION - 21 SH

PET	6946	Practicum	3 hours
EEX	5051	Exceptional Children in Schools	3 hours
PET	6615	Psychomotor Assessment of Exceptional Children	2 hours
PET	6646	Methods and Curriculum in Adapted Physical Education	4 hours
PET	6655	Developmental Aspects of Motor Disabilities	3 hours
PET	6238C	Perceptual Motor Development	3 hours
PET	6910	Problem Analysis - Review of Literature	3 hours

PHYSICAL EDUCATION: EXERCISE PHYSIOLOGY/ WELLNESS TRACK

Master of Arts: Minimum hours required for M.A. 39/45

AREA A - CORE - 9 or 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
PET	6910	Problem and Review of Literature	3 hours

Select One Option:

Option A - Research Report - 3 SH

PET	6971	Thesis	2,1 hours
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Option B - Non-Thesis - 0 SH

AREA B - SPECIALIZATION - Select 21 SH FOR THESIS OPTION*

27 SH FOR NON-THESIS OPTION

PET	6386C	Environmental Exercise Physiology	3 hours
PET	6377	Physiology on Neuromuscular Mechanisms	3 hours
PET	6367	Physical Performance & Energy Supplies	3 hours
PET	6416	Administration of Corporative Wellness	3 hours
PET	6086	Exercise Intervention & Risk Hazards	3 hours
PET	6085	Exercise Lifestyles-Adherence & Compliance	3 hours
PET	6088	Wellness Development of Children	3 hours
PET	6085	Personal and Organizational Wellness	3 hours
EDF	6401	Statistics for Educational Data	3 hours
PET	6946	Internship Practicum	3 hours
PET	6388	Exercise Physiology and Cardiovascular Disease Prevention	3 hours
PET	5355	Exercise Physiology and Health	3 hours

*Thesis Option Omit 6 SH from Area B

*Thesis Option must include EDF 6401



Creative School for Children

READING EDUCATION

Master of Education: Minimum hours required for M.Ed. 36

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 practicums with disabled readers from the early childhood to adult levels. People certified in areas of education other than elementary are eligible to pursue a degree in the program.

AREA A - CORE - 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6236	Principles of Instructional and Learning	3 hours

Select One Option:

Option A: Thesis

EDF	6401	Statistics for Educational Data	3 hours
RED	6971	Thesis	2,1 hours

Option B: Research Report

EDF	6155	Lifespan Human Development and Learning	3 hours
RED	6909	Research Report	2,1 hours

AREA B - SPECIALIZATION - 21 SH

RED	6845	Advanced Evaluation and Instruction in Reading	3 hours
RED	6846	Reading Practicum	6 hours
RED	6116	Trends in Reading Education	3 hours
RED	6746	Management of Reading Programs	3 hours
RED	6336	Reading in the Content Areas	3 hours
RED	6337	Reading in the Secondary Schools PR:6336	3 hours

Prerequisites: Prescribed by College of Education to meet State

Certification requirements or as support for degree program.

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

SCIENCE EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

This program is designed to meet the advanced knowledge and skill needs of the science classroom teacher.

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data OR	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours

Select One:

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)	6 hours
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AREA B - SPECIALIZATION - 9 SH (ELECTIVES APPROVED BY ADVISOR) 9 hours

AREA C - CURRICULUM - 12 SH (6 SH ELECTIVE APPROVED BY ADVISOR)

SCE	6237	Science Programs Secondary School	3 hours
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SCE	6238	Inquiry in the Sciences	3 hours
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		Elective	6 hours
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SCIENCE EDUCATION: BIOLOGY

Master of Arts: Minimum hours required for M.A. 41/44

Program for non-education majors, or previously certified teachers in another field.

AREA A - CORE - 19 or 22 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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EDF	6155	Lifespan Human Development and Learning	3 hours
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ESE	6235	Curriculum Design	3 hours
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EDG	4321	Teaching Strategies	4 hours
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EDF	6517	History and Philosophy of American Education	3 hours
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Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH

PCB	5675C	Evolutionary Biology	4 hours
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PCB	5045	Conservation Biology	4 hours
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AREA B - SPECIALIZATION - 12 SH (ELECTIVES APPROVED BY ADVISOR)

BOT	6146C	Terrestrial Vegetation	4 hours
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PCB	5046C	Advanced Ecology	5 hours
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SCE	6237	Science Programs in Secondary School OR	3 hours
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SCE	6238	Inquiry in the Sciences	3 hours
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AREA C - INTERNSHIP - 10 SH

ESE	6946	Graduate Internship	3 hours
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ESE	6946	Graduate Internship	7 hours
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Corequisites: Students must meet the 30 hour rule with courses in Genetics, General Biology, Ecology, Technology or History of Science.

SCE	3330	Science Instructional Analysis	4 hours
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SCIENCE EDUCATION: CHEMISTRY

Master of Arts: Minimum hours required for M.A. 41/44

Program for non-education majors, or previously certified teachers in another field.

AREA A - CORE - 19 or 22 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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EDF	6155	Lifespan Human Development and Learning	3 hours
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ESE	6235	Curriculum Design	3 hours
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EDG	4321	Teaching Strategies	4 hours
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EDF	6517	History and Philosophy of American Education	3 hours
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Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (6 SH in 5000 or 6000 level

Chemistry—May include 3 hours of
4000 level—Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 12 SH (9 SH OF 5000 OR 6000 LEVEL 9 hours

CHEMISTRY APPROVED BY ADVISOR)

SCE 6237 Science Programs in Secondary Schools OR 3 hours

SCE 6238 Inquiry in the Sciences 3 hours

AREA C - INTERNSHIP - 10 SH

ESE 6946 Graduate Internship 3 hours

ESE 6946 Graduate Internship 7 hours

Corequisites: Students must have degree in field or 30 SH in chemistry including Technology or History of Science.

SCE 3330 Science Instructional Analysis 4 hours

SCIENCE EDUCATION: PHYSICS

Master of Arts: Minimum hours required for M.A. 41/44

Program for non-education majors, or previously certified teachers in another field.

AREA A - CORE - 19 or 22 SH

EDF 6481 Fundamentals of Graduate Research in Education 3 hours

EDF 6155 Lifespan Human Development and Learning 3 hours

ESE 6235 Curriculum Design 3 hours

EDG 4321 Teaching Strategies 4 hours

EDF 6517 History and Philosophy of American Education 3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE 6909 Research Report 2,1 hours

Option B - Non-Thesis - 6 SH (3 SH in 5000 or 6000 level Physics 3 hours
Approved by Advisor)

PHY 5015C Physics for Teachers II 3 hours

AREA B - SPECIALIZATION - 12 SH (9 SH OF 5000 OR 6000 LEVEL 9 hours
PHYSICS APPROVED BY ADVISOR)

SCE 6237 Science Programs in Secondary Schools OR 3 hours

SCE 6238 Inquiry in the Sciences 3 hours

AREA C - INTERNSHIP - 10 SH

ESE 6946 Graduate Internship 3 hours

ESE 6946 Graduate Internship 7 hours

Corequisites: Students must have B.S. degree in Physics or B.S. degree with 30 SH in Physics including Technology or History of Science.

SCE 3330 Science Instructional Analysis 4 hours

SOCIAL SCIENCE EDUCATION

Master of Education: Minimum hours required for M.Ed. 33/36

This program is designed to meet advanced knowledge and skill needs of the social science classroom teacher.

AREA A - CORE - 9 or 12 SH

EDF 6481 Fundamentals of Graduate Research in Education 3 hours

EDF 6401 Statistics for Educational Data 3 hours

EDF 6432 Measurement and Evaluation in Education 3 hours

Select One:

EDF 6155 Lifespan Human Development and Learning 3 hours

EDF 6517 History and Philosophy of American Education 3 hours

EDF 6608 Social Factors in American Education 3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE 6909 Research Report 2,1 hours

Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)			3 hours
AREA B - SPECIALIZATION - 9 SH (ELECTIVES APPROVED BY ADVISOR)			3 hours
			3 hours
			3 hours
AREA C - CURRICULUM - 12 SH (3 SH ELECTIVE APPROVED BY ADVISOR)			
ESE	6235	Curriculum Design	3 hours
ESE	6325	Curriculum Theory	3 hours
SSE	6636	Contemporary Social Science Education	3 hours
			3 hours

SOCIAL SCIENCE EDUCATION

Master of Arts: Minimum hours required for M.A. 40/43

Program for non-education majors or previously certified teachers in another field.

AREA A - CORE - 18 or 21 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
ESE	6235	Curriculum Design	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDF	6517	History and Philosophy of American Education	3 hours

Select One Option:

Option A - Research Report - 3 SH

ESE	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 6 SH (Electives Approved by Advisor)

6 hours

AREA B - SPECIALIZATION - 12 SH (ELECTIVES APPROVED BY ADVISOR)

12 hours

AREA C - INTERNSHIP - 10 SH

ESE	6946	Graduate Internship	3 hours
ESE	6946	Graduate Internship	7 hours

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

SSE	3333	Social Science Instructional Analysis	4 hours
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VOCATIONAL EDUCATION

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. This degree requires a minimum of 33 semester hours.

The Master of Arts degree is designed for the student who has a baccalaureate degree in a discipline other than education. This degree requires a minimum of 39 semester hours.

VOCATIONAL EDUCATION: ADMINISTRATOR OPTION

Master of Education: Minimum hours required for M.Ed. 34/37

AREA A - CORE - 12 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6401	Statistics for Educational Data	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	

Select One Option:

Option A - Research Project - 3 SH

EVT	6909	Research Report	2,1 hours
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Option B - Non-Thesis - 3 SH

EVT	6946	Graduate Internship	3 hours
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AREA B - SPECIALIZATION - 22 SH (6 SH ELECTIVES APPROVED BY ADVISOR)

EVT	6265	Supervision in Vocational Education	3 hours
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EVT	6664	School/Community Relations for Vocational Ed	3 hours
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EVT	6264	Administration in Vocational Education	3 hours
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EDA	6232	Legal Aspects of School Operation	3 hours
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ESE	6325	Curriculum Theory OR	3 hours
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ESE	6235	Curriculum Design	3 hours
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VOCATIONAL EDUCATION: BUSINESS

Master of Education: Minimum hours required for M.Ed. 33

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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EDF	6401	Statistics for Educational Data OR	3 hours
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EDF	6432	Measurement and Evaluation in Education	3 hours
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Select One:

EDF	6155	Lifespan Human Development and Learning	3 hours
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EDF	6517	History and Philosophy of American Education	3 hours
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EDF	6608	Social Factors in American Education	3 hours
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ESE	6909	Research Report	2,1 hours
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AREA B - SPECIALIZATION - 12 SH

BTE	6371	Advanced Business Instructional Technology	3 hours
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BTE	6773	Office Simulation Technology	3 hours
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BTE	6935	Seminar in Business Education	3 hours
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BTE	6946	Practicum in Business Education	3 hours
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AREA C - VOCATIONAL CORE - 9 SH

BTE	6172	Business Education Curriculum	3 hours
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EVT	6264	Administration in Vocational Education	3 hours
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EVT	6265	Supervision in Vocational Education	3 hours
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VOCATIONAL EDUCATION

Master of Education: Minimum hours required for M.Ed. 39/42

AREA A - CORE - 12 or 15 SH

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
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Select One:

EDF	6155	Lifespan Human Development and Learning	3 hours
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EDG	6517	History and Philosophy of Higher Education	3 hours
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EDF	6608	Social Factors in American Education	3 hours
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Select One Option:

Option A - Research Report - 3 SH

EVT	6909	Research Report	2,1 hours
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Option B - Non-Thesis - (6 SH Internship or 6 SH Electives Approved by Advisor)

EVT	6946	Graduate Internship or Electives	6 hours
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AREA B - SPECIALIZATION - 30 SH

EVT	4065	Principles and Practices of Vocational Education	4 hours
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EVT	4368	Advanced Teaching Techniques for Vocational Education	3 hours
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EVT	5561	Student Guidance in the Vocational Program	3 hours
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EVT	5564	Student Vocational Organizations	3 hours
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ECT	6664	School/Community Relations for Vocational Education	3 hours
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		Electives Approved by Advisor	14 hours
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VOCATIONAL EDUCATION: HEALTH RELATED

Master of Arts: Minimum hours required for M.A. 39/42

AREA A - CORE - 12 or 15 SH

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:

Option A - Research Report - 3 SH

EVT	6909	Research Report	2,1 hours
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Option B - Non-Thesis (6 SH Internship or 6 SH Electives Approved by Advisor)

EVT	6946	Graduate Internship or Electives	6 hours
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AREA B - SPECIALIZATION - 30 SH

EVT	4065	Principles and Practices of Vocational Education	4 hours
EVT	4368	Advanced Teaching Techniques for Vocational Ed	3 hours
EVT	5315	Applied Clinical Teaching Techniques in Vocational Education	3 hours
EVT	5316	Clinical Coordination for the Health Occupations Teacher	3 hours
EVT	6265	Supervision in Vocational Education	3 hours
EVT	6664	School/Community Relations for Vocational Education	3 hours
		Electives Approved by Advisor	11 hours

VOCATIONAL EDUCATION

Master of Arts: Minimum hours required for M.A. 49/52

AREA A - CORE - 19 or 22 SH

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 Higher Education	3 hours
EDF	6608	Social Factors in American Education	3 hours

Select One Option:

EVT	6946	Graduate Internship	6 hours
EVT	6971	Research Report	2,1 hours

AREA B - SPECIALIZATION - 30 SH

EVT	4065	Principles and Practices of Vocational Education	4 hours
EVT	4368	Advanced Teaching Techniques for Vocational Ed	3 hours
EVT	5561	Student Guidance in the Vocational Program	3 hours
EVT	5564	Student Vocational Organizations	3 hours
EVT	6664	School/Community Relations for Vocational Education	3 hours
		Electives Approved by Advisor	14 hours

Corequisites:

EVT	3371	Course Construction in Industrial Education OR	4 hours
BTE	4410	Course Construction in Business Education	4 hours

EDUCATIONAL SPECIALIST DEGREE PROGRAMS

Educational Specialist (Ed.S.) degree programs are offered in three areas: Curriculum/ Instruction, designed for persons in teaching and other instruction/training leadership positions; Educational Leadership, for students who are interested in decision-making positions in educational organizations; and School Psychology, a special degree program that does not require a master's degree for admission but does have other special admission criteria.

CURRICULUM/INSTRUCTION AND EDUCATIONAL LEADERSHIP

Admissions Policy

Admissions will occur two times a year, Fall and Spring. Completed files must be on campus by September 15 for Spring admission screening and February 15 for Fall admission screening. Admitted students may begin course work during the first new semester after admission.

Completed files include: 1) completed UCF Graduate School application form, 2) transcripts from all post-secondary schools previously attended, 3) GRE scores, 4) three letters of recommendation, 5) professional resume, 6) statement of professional goals, 7) other information that may be requested after the file is started.

Additional Information

Admission to an Educational Specialist Degree Program is separate from admission to the Doctoral Program. Upon completion of the Specialist Degree, the candidate may apply for admission to the Ed.D. degree program.

Specialist Admission Requirements

1. A master's degree from an accredited institution;
AND
2. A combined score of 1000 or above on the General Graduate Record Examination (verbal/quantitative scores combined);
AND
3. Recommended for admission by the appropriate major program committee.

NOTE: Those applicants who do not meet admission criteria may appeal to the College of Education Graduate Standards and Curriculum Committee for consideration. A second GRE score of 900 or above is required for review by this committee.

Degree Requirements

1. Complete a minimum of 36 semester hours beyond the Master's Degree including the selected program requirements.
2. Have an overall 3.0 GPA on all graduate work attempted.
3. 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.
4. Pass all required examinations.

Transfer Credit

Total transfer credit may not exceed 9 semester hours and must be earned after the Master's Degree (maximum of 9 semester hours from other institutions within the State University System (SUS) or 6 semester hours earned at institutions not in the SUS but which are fully accredited).

Post-master's degree work taken at UCF prior to admission to the program is considered to be transfer credit.

Required 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.

Time Limits

Course credit hours counted toward a degree may be no more than seven years old by the time the degree requirements are completed.

Continuous Attendance

Students may not be guaranteed continuing graduate status if they do not enroll in the University for a period of three consecutive semesters INCLUDING Summer.

Graduation policy allows students to fulfill degree requirements as listed in the UCF Catalog in force during the student's most recent period of attendance. Because students must occasionally interrupt their attendance for a brief period, they will be considered to have interrupted their attendance only if the interruption is for three or more consecutive terms, including Summer. Under these circumstances, students will lose the option of fulfilling degree requirements under earlier catalogs.

SCHOOL PSYCHOLOGY

The Educational Specialist degree program in School Psychology is a unique specialization in psychology and education. This program is based on the assumptions that school psychologists can apply relevant knowledge and skills from a variety of disciplines to the learning and adjustment problems of preschool and school-age children; and that relevant knowledge and skills can be transmitted through a variety of services including (a) consultation with teachers and parents, (b) direct services to children and young adults, and (c) indirect services to school and community organizations. School psychologists may practice in public or private schools, colleges and universities, rehabilitation centers, hospitals, mental health clinics, government agencies, child guidance centers, penal institutions, and may develop private practices. Applicants with backgrounds in education, psychology or other undergraduate majors may qualify. The program involves formal preparation and practical experiences focusing on psychological foundations (human development, learning and motivation), psycho-educational assessment, exceptional students, remediation or intervention techniques, counseling skills, as well as full-time supervised internship of two semesters in the public school setting. Graduates are certifiable at the state level.

Other criteria: Applicants for the School Psychology program are required to attend a formal interview. 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 policy and procedures can be obtained from the contact person listed below.

AREA A - CORE

21 Semester Hours

EEX	5051	Exceptional Children in the Schools	3 hours
RED	6336	Reading in the Content Area	3 hours
DEP	5057	Developmental Psychology	3 hours
EXP	5445	Psychology of Learning and Motivation	3 hours
EAB	5765	Applied Behavior Analysis with Children and Youth	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6481	Fundamentals of Graduate Research in Education	3 hours

AREA B - SPECIALIZATION

45 Semester Hours

SPS	6601	Introduction to Psychological Services in Schools	3 hours
SPS	6608	Seminar in School Psychology	3 hours
EGC	6435	Theories of Individual Counseling	3 hours
EGC	6436	Techniques of Counseling	3 hours
EGC	6505	Group Procedures and Theories in Counseling	3 hours
SPS	6191	Psycho-Educational Diagnosis I	3 hours

SPS	6192	Psycho-Educational Diagnosis II	3 hours
SPS	6606	School Consultation Techniques	3 hours
SPS	6175	Multicultural Issues and Assessment	2 hours
SPS	6125	Infant Developmental Assessment	2 hours
SPS	6946	Practicum in School Psychology I	1 hour
SPS	6946	Practicum in School Psychology II	1 hour
SPS	6973	Thesis: Specialist (Planning Phase)	2 hours
SPS	6973	Thesis: Specialist (Finishing Phase)	1 hour
SPS	6949	School Psychology Internship	12 hours
Pre- or Corequisites			
EDA	6061	Organization and Administration of Schools	3 hours
EDF	6517	History & Philosophy of American Education	3 hours
		or	
EDF	6608	Social Factors in American Education	3 hours
		One other course in administration/supervision, curriculum or general methods.	3 hours
Total Minimum Semester Hours Required:			66

DOCTOR OF EDUCATION DEGREE PROGRAMS

Doctor of Education (Ed.D.) degree programs are offered in two areas. One is Educational Leadership for students who are interested in management and leadership positions in educational organizations. The second is Curriculum and Instruction, designed for those interested in teaching in a college of education, teaching a content field at the community college level, becoming a school district leader in curriculum and instruction, or performing instructional design tasks in military or business settings.

Admission Policy

Admissions will occur two times a year, Fall and Spring. Completed files must be on campus by September 15 for Spring admission screening and February 15 for Fall admission screening. Admitted students may begin course work during the first new semester after admission.

Completed files include: 1) completed UCF Graduate School 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.

Students interested in financial support through fellowship programs must have completed application files by December 15. Fellowships are typically awarded in the previous spring for students enrolling for the first time in the Fall Semester of the next academic year. Graduate assistantships may be granted for those who apply by February 15 for the following academic year.

Admission Requirements

1. Undergraduate GPA on the last 60 semesters hours of 3.0 (on a 4.0 scale);
AND
2. A master's degree from an accredited institution;
AND
3. Minimum score of 1000 on the General Graduate Record Examination (verbal/quantitative scores combined);
AND
4. Recommended for admission by the appropriate major program area committee;
AND
5. Completion of at least three years of full-time teaching or comparable experience.

NOTE: Those applicants who do not meet admission criteria may appeal to the College of Education Graduate Standards and Curriculum Committee for consideration. For those who

do not meet the GRE requirement, a second score is required, and one of the two scores must be 940 or higher for consideration for provisional admission.

Degree Requirements for Curriculum/Instruction

1. Prerequisites
(EDG 6223, EDF 6481, EDF 6401, or Equiv.) 9 semester hours
2. Curriculum/Instruction Core
(EDF 7232, EDG 7221, EDG 7356, EDG 7692) 12 semester hours
All core courses and the core examination *must* be completed in the first six semesters of enrollment in the doctoral program.
3. Specialization Area Minimum 45 semester hours
(includes selected courses in Teaching Field or Cognate, Instruction, Foundations, and Educational Leadership)
4. Research and Data Analysis (EDF 7403, EDF 7463) 6 semester hours
5. Dissertation Minimum 18 semester hours
6. Pass all required examinations and successfully defend dissertation.
7. Have an overall 3.0 GPA on all graduate work included in the planned program.

Degree Requirements for Educational Leadership

1. Prerequisite Courses (as necessary)
2. Educational Leadership Core Courses 16 semester hours
3. Cognate Courses Minimum 6 semester hours
4. Area of Specialization Minimum 15 semester hours
5. Research and Data Analysis Minimum 12 semester hours
6. Dissertation Minimum 20 semester hours
7. Pass all examinations and successfully defend dissertation.
8. Have an overall 3.0 GPA on all graduate work attempted.

Transfer Credit

The number of transfer credit hours applied to the course requirements for a doctoral degree may not exceed 30 semester hours. Transfer credit will include graduate hours awarded by an accredited institution toward a master's degree and post-master's degree work. The transfer credit allowed will be determined on a case by case basis by the graduate advisor and program coordinator.

Post-Master's degree credit taken at UCF prior to admission to the program is considered to be transfer credit.

Candidacy Examinations

1. Examinations are normally taken no sooner than the last semester of the student's course work and must be completed prior to admission to candidacy. (The exception is for C & I students who take a qualifying examination after completing the C & I core courses.)
2. Examinations will be scheduled near the tenth week of the Fall and Spring Semesters. Examinations in the Summer Term must be arranged by the student with the coordinator of the respective program.
3. All doctoral candidates will be required to write in three areas; these are:
 - a. Curriculum and Instruction
 - Specialization/Teaching Field 5-hour examination
 - Curriculum/Instruction 3-hour examination
 - Research/Data Analysis 3-hour examination
 - b. Educational Leadership
 - General Administration/Supervision 5-hour examination
 - Area of Specialization 3-hour examination
 - Research/Data Analysis 3-hour examination
4. Students must be enrolled in the University during the semester an examination is taken.

Continuous Attendance

Graduation policy allows students to fulfill degree requirements as listed in the UCF Catalog in force during the student's most recent period of continuous attendance. Because students must occasionally interrupt their attendance for a brief period, they will be considered to have interrupted their attendance only if the interruption is for three or more consecutive terms, including Summer. Under these circumstances, students will lose the option of fulfilling degree requirements under earlier catalogs. To avoid problems associated with maintaining graduate status, doctoral students are encouraged to enroll each semester, including summers.

Residency Requirement

Each student shall complete two contiguous resident semesters in full-time graduate student status. "Full-time" 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 defended the dissertation proposal.

Status as a Candidate

1. Enrollment

Students must continue to enroll for at least one semester hour of dissertation credit each semester after attaining candidacy status until the oral defense of the dissertation has been successful. Post-candidacy enrollment is allowed for a maximum of four years, subject to the seven-year time limitation.

2. Time Limitation

A student has seven years from the date of admission to the doctoral program to complete the dissertation. If the seven-year limit is exceeded, the candidacy examinations may need to be repeated.

3. Dissertation Committee Composition

A committee, which will consist of a minimum of four faculty members (three from the College of Education and one from outside the college), must be approved by the Dean of the College of Education and the Provost.

4. Dissertation

Dissertations are required in all doctoral programs. College of Education candidates will follow the APA (American Psychological Association) guidelines.

College of Education Courses

ARE 5251 Art for Exceptionalities

3 cr (2,1)

Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.

ARE 5358 Found Arts

3 cr (3,0)

PR: ARE 4440 and ARE 4443 or C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

ARE 5648 Contemporary Visual Arts Education

3 cr (3,0)

PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school Visual Arts Programs.



ARE 6195 Teaching Art Appreciation With Interdisciplinary Strategies 3 cr (2,1)

PR: Grad. Status and public school teaching experience. This course will focus on the examination of art appreciation examples & concepts toward planning curriculum (interdisciplinary for the study of art history, criticism and aesthetics).

ARE 6455 K-12 Art Instructional Materials I 3 cr (3,0)

Advanced application of two-dimensional, three-dimensional, and graphics materials to appropriate levels of instruction in elementary and secondary schools.

ARE 6666 Arts Advocacy 3 cr (2,1)

The content of this course will deal with the study and development of plans to produce arts advocacy programs for the public school system.

ARH—See College of Arts & Sciences, Department of Art

ART 5109C Crafts Design 3 cr (2,1)

Crafts design and production, including the use of rigid, flexible, and linear materials.

BTE 6171 Business Education Curriculum 3 cr (3,0)

PR: Basic Teacher Certificate or C.I. Curriculum planning and development; objectives, innovations, problems and issues in contemporary business programs.

BTE 6425 Advanced Business Instruction Techniques 3 cr (3,0)

PR: Graduate standing or C.I. Research, methods and materials related to current practices in Business Education.

BTE 6426 Office Simulation Techniques 3 cr (3,4)

PR: Basic Teacher Certificate or C.I. Methods of office simulation for teachers at the developmental and performance levels.

- BTE 6935 Seminar in Business Education** 3 cr (3,0)
PR: Graduate Standing or C.I. Current problems, issues and trends in Business Education.
- BTE 6946 Practicum Business Education** 3 cr (3,0)
PR: Graduate Standing. Techniques, materials and instructional media; evaluation and new trends of instruction in all areas of Business Education.
- CAP 6613 Utilizing Microcomputers in Education** 3 cr (0)
Instruction in microcomputers emphasizing applications of software in the classroom and for school record keeping.
- CLP 5004 Psychology of Adult Adjustment - See College of Arts and Sciences, Department of Psychology**
- CLP 5166 Advanced Abnormal Psychology - See College of Arts and Sciences, Department of Psychology**
- DEP 5057 Developmental Psychology - See College of Arts and Sciences, Department of Psychology**
- EAB 5765 Applied Behavior Analysis with Children and Youth - See College of Arts and Sciences, Department of Psychology**
- EDA 6061 Organization and Administration of Schools** 3 cr (3,0)
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 Trends in Educational Administration** 3 cr (3,0)
PR: Master's degree and/or Rank II certification including a course in school organization. Exemplary organization patterns in school administration will be examined. Study of patterns of functions in selected outstanding school organizations.
- EDA 6201 Educational Business Management Systems** 3 cr (3,0)
PR: Master's degree and a graduate course in school finance and business administration. Identification and study of exemplary management procedures and systems in education.
- EDA 6222 Administration of Educational Personnel and Contracts** 3 cr (3,0)
PR: Master's degree and/or Rank II certification, including a course in educational law. Study of educational settings in which administrators deal with contracts and legal dimensions of instructional, technical, and staff personnel. Federal, state, and local factors will be analyzed.
- EDA 6232 Legal Aspects of School Operation** 3 cr (3,0)
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 Educational Financial Affairs** 3 cr (3,0)
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 Educational Systems Planning and Management** 3 cr (3,0)
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 Community School Administration** 3 cr (3,0)
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 Organization and Administration of Instructional Programs** 3 cr (3,0)
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 Organization and Administration of Higher Education** 3 cr (3,0)
PR: C.I. Purposes, organizations and administration of two-year and four-year institutions of higher education in the U.S. Public and private colleges are studied.

- EDA 6946 Internship** 1-6 cr
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 7192 Educational Leadership** 4 cr (4,0)
PR: Advanced graduate status of 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 Politics, Governance and Financing of Educational Organizations** 4 cr (4,0)
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 Planning, Research and Evaluation Systems in Educational Administration** 4 cr (4,0)
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 Educational Personnel, Contracts and Negotiations** 4 cr (4,0)
PR: Advanced graduate status or C.I. Program and completion of a course in school law. Readings, discussions and research pertaining to administration of educational personnel and contracts with emphasis on collective bargaining, negotiations and grievance resolution.
- EDA 7235 Seminar in School Law** 3 cr (3,0)
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 7241 Economics of Public Education** 3 cr (3,0)
PR: C.I. Economic effects of schools upon the local, state and national economy; resource allocation and education investment.
- EDA 7260 Educational Facilities** 3 cr (3,0)
PR: C.I. Administration of educational facilities such as surveys, finance plans and specifications, equipment, contracts, construction procedures, maintenance and custodial services.
- EDA 7274 Seminar: Applications of Technology to Educational Leadership** 3 cr (4,0)
PR: EDA 6260 or C.I. Study of administrative and leadership technology applications at the school building or district level.
- EDA 7905 Directed Independent Study** 3 cr
- EDA 7930 Seminar in School Administration** 3 cr (3,0)
PR: C.I. Discussion of problems in school administration, patterns of curriculum organization and research projects.
- EDA 7943 Field Project** 3 cr (3,0)
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 7919 Dissertation Research** 1-6 cr
PR: C.I.
- EDA 7980 Dissertation** 1-20 cr
PR: Admission of candidacy.
- EDE 5541 Individualizing Instruction in the Elementary School** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Study of basic philosophy, organizational patterns, techniques, materials and activities related to individualizing instruction in the elementary school classroom.
- EDE 6205 Elementary School Curriculum** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of elementary schools.
- EDF 5245 Preparation and Management of Classroom Instruction** 3 cr (3,0)
PR: C.I. Study of strategies for instructional planning and classroom management that result in optimum learning.

- EDF 5259 Classroom Management and Teaching** 3 cr (3,0)
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 Lifespan Human Development and Learning** 3 cr (3,0)
Research in childhood, adolescent and adult development relevant to contemporary American education. Emphasis on application of theory to educational practice.
- EDF 6233 Analysis of Classroom Teaching** 3 cr (3,0)
PR: EDF 6481 or C.I. Analyses of effective teaching practices and their effect upon classroom instruction and learning.
- EDF 6236 Principles of Instruction and Learning** 3 cr (3,0)
The analysis and application of selected concepts and theories of learning in relation to curriculum design, classroom strategies, and instructional techniques.
- EDF 6259 Strategies of Classroom Management** 3 cr (3,0)
Study of strategies of classroom management that result in optimum learning and a minimum of behavior problems.
- EDF 6401 Statistics for Educational Data** 3 cr (3,0)
PR: EDF 6481 or C.I. Design of educational evaluation; analysis of data, descriptive and inferential statistics, interpretation of results.
- EDF 6432 Measurement and Evaluation in Education** 3 cr (3,0)
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 6437 Development and Validation of Educational Tests and Measures** 3 cr (3,0)
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 Fundamentals of Graduate Research in Education** 3 cr (3,0)
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 Research Design in Education** 3 cr (3,0)
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 History and Philosophy of American Education** 3 cr (3,0)
PR: C.I. A critical analysis of the conceptual and operative educational systems developed in the United States of America.
- EDF 6608 Social Factors in American Education** 3 cr (3,0)
Analysis of general and specific aspects of American education as they relate to social and behavioral sciences.
- EDF 6886 Multicultural Education** 3 cr (3,0)
A survey of multicultural education; analysis of the relationship between cultural transmission, cultural pluralism, and the learning process within American schools.
- EDF 7232 Analysis of Learning Theories in Instruction** 3 cr (3,0)
PR: Advanced graduate standing or C.I. Analysis of theories and research relevant to understanding learning in educational settings.
- EDF 7403 Quantitative Foundations of Educational Research** 3 cr (3,0)
PR: EDF 6401 or C.I. Examination of appropriate methods in applied educational contexts. Consideration of analysis strategies for educational data, emphasis on identification and interpretation of findings.
- EDF 7463 Analysis of Survey, Record and Other Qualitative Data** 3 cr (3,0)
PR: EDF 6401. Applications of summative evaluation for education: interpretation of impact data, measurement scales, survey and record data.
- EDF 7475 Qualitative Research in Education** 3 cr (3,0)
PR: EDF 7463. Introduction to the philosophical and conceptual basis of qualitative research methods, strategies for gathering, analyzing and interpreting qualitative data, emerging issues.
- EDG 5325 Techniques for the Developing Professional in Education** 3 cr (3,0)
PR: C.I. Analysis, study, development and use of techniques for enhanced instruction in the educational setting.

- EDG 5337 Teaching Individuals, Small and Large Groups** 3 cr (3,0)
Study of teaching skills for effectively instructing individuals in various educational groups, with consideration of developmental and behavioral characteristics of students.
- EDG 5745 Teaching the Non-English Student** 3 cr (3,0)
PR: FLE 3063 or bilingual and non-linguistic instruction in curriculum areas and in English as a second language.
- EDG 5941 Clinical Practice** 2-8 cr (0,11)
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 Contemporary Issues in Education** 3 cr (3,0)
An analysis of current trends in education and their impact on educational programs.
- EDG 6223 Curriculum Theory and Organization** 3 cr (3,0)
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 6253 Curriculum Inquiry** 3 cr
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 Evaluation of School Programs** 3 cr (3,0)
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 Techniques of Game Use in Education** 3 cr (3,0)
Analysis, development, and use of educational games as an approach to classroom teaching.
- EDG 6415 P.R.I.D.E. (Professional Refinements in Developing Effectiveness)** 3 cr (3,0)
PR: C.I. Questioning techniques, student non-verbal communication; build a symmetry of classroom rewards and penalties; analyze critical incidents that institute practices for the lowest risk and greatest gain.
- EDG 6416 Project: T.E.A.C.H.** 3 cr (3,0)
PR: C.I. Topics in questioning and paraphrasing skills, positive support problem, solving skills, counseling techniques, non-confrontation strategies, group dynamics and discipline decision making.
- EDG 6417 Teaching Through Learning Channels** 3 cr (3,0)
PR: C.I. Teaching effectiveness on identifying and use of student learning channels, analysis of curricula based on learning channels; develop alternative strategies to meet needs of heterogeneous classroom.
- EDG 6940 Graduate Internship** 1-8 cr (0,1-8)
PR: Approval of Student Internship Office. Internship in an appropriate educational setting under the direction of a qualified field supervisor and/or a university supervisor. (May be repeated for credit.)
- EDG 7221 Advanced Curriculum Theory** 3 cr (3,0)
PR: EDF 6232; ESE 6325 or C.I. An analysis of the research base which supports the various dimensions of the curriculum field.
- EDG 7356 Models of Teaching and Instructional Theory** 3 cr (3,0)
PR: EDF 6232 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 Issues in Curriculum** 3 cr (3,0)
PR: EDG 7221; EDG 7356 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 Dissertation Research** 1-6 cr
PR: C.I.
- EDG 7939 Special Topics/Seminars** 1-6 cr
PR: Doctoral level.
- EDG 7980 Dissertation** 1-20 cr
PR: Admission to Candidacy.

- EDH 6065 History and Philosophy of Higher Education** 3 cr (3,0)
PR: C.I. Early European and American universities, both state and private. Also considers small and private junior and senior colleges.
- EDH 6215 Community College Curriculum** 3 cr (3,0)
PR: C.I. Examination of the background, development, function, and goals of the curriculum of the community college.
- EDH 6505 Finance in Higher Education** 3 cr (3,0)
PR: Completion of Phase II of Education Professional Preparation or C.I. Fundamental considerations in the finance of institutions of higher education.
- EDH 6305 Improvement of Instruction in Colleges** 3 cr (3,0)
PR: C.I. Purposes, trends, outcomes and special programs in the curriculum. Considers techniques for identifying, improving and rewarding good college teaching. Test construction, measurement and learning theories.
- EDM 5235 Teaching in the Middle School** 3 cr (3,0)
Methods of middle school teaching; team planning and teaching; developmental and learning patterns of the emerging adolescent; use of alternative teaching strategies.
- EDS 5356 Supervision of Professional Laboratory Experiences** 3 cr (2,1)
PR: C.I. Study of the undergraduate professional laboratory experiences program with emphasis on the role and responsibilities of the teacher education associate or supervising teacher.
- EDS 5357 Supervision of Clinical Experiences** 3 cr (3,0)
PR: C.I. Study of the beginning teacher and STEP programs with emphasis on the role and responsibilities of the peer teacher or building level administrator.
- EDS 6050 Supervision of Instruction** 3 cr
Effective supervisory principles and practices which can be used for instructional improvement.
- EDS 6053 Trends in Educational Supervision** 3 cr (3,0)
PR: Basic supervision course or C.I. Examination and analysis of the trends, issues, and problems in educational supervision.
- EDS 6100 Leadership** 3 cr (3,0)
PR: C.I. Analysis of the interactive process within and between groups, emphasizing the formation and functioning of groups; development of skills essential for effective leadership.
- EDS 6123 Educational Supervisory Practices I** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Analysis of effective supervisory behavior as it relates to human relations/communication skills; leadership; motivation; curriculum development; community relations; and service to teaching.
- EDS 6130 Educational Supervisory Practices II** 3 cr (3,0)
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 Administration and Supervision of Staff Development** 3 cr (2,1)
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 Programs and Trends in Early Childhood Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Philosophy, content, facilities, instructional materials and activities appropriate for children 3 to 8 years of age; current research; issues and trends. Concurrent laboratory experiences.
- EEC 5206 Organization of Instruction in Early Childhood Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Organization and techniques in instruction relating to language arts, social sciences, science, mathematics, health and physical education; problems relating to reading readiness perception and cognition (K-3). Concurrent laboratory experience.
- EEC 5208 Creative Activities in Early Childhood** 4 cr (4,0)
PR: Basic Teacher Certificate or C.I. Organization of instruction and methods for creative activities involving music, art, literature and educational toys. Integration of activities and basic skills curriculum (K-3). Concurrent laboratory experience.

- EED 6071 Behavior Disorders in Schools** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Assessment/analysis of behavior disorders, cause and effects, identification and theories.
- EED 6226 Theory and Application for EH** 3 cr (3,0)
PR: C.I. Study of various approaches to use in teaching emotionally handicapped children interpersonal and cognitive skills with special emphasis on the severe and moderate populations.
- EEX 5051 Exceptional Children in the Schools** 3 cr (3,0)
PR: Senior Standing or C.I. Characteristics, definitions, educational problems and appropriate educational programs for the exceptional children in schools.
- EEX 6061 Instructional Strategies PREK-6** 3 cr (3,0)
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.
- EEX 6065 Instructional Strategies 6-12** 3 cr (3, 0)
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.
- EEX 6107 Teaching Spoken and Written Language** 3 cr (3,0)
Diagnosis and remediation of spoken and written language problems found in the exceptional populations. Overview of alternative methods of communication.
- EEX 6257 Exceptional Adolescents** 3 cr (3,0)
An examination of the problems, diagnosis, teaching strategies and materials peculiar to the exceptional adolescent.
- EEX 6266 Assessment and Curriculum Prescriptions for the Exceptional Population** 3 cr (3,0)
The class addresses contemporary assessments and models for assessing exceptional children. Curriculum and prescription are also addressed.
- EEX 6342 Seminar—Critical Issues in Special Education**
An examination of research and current literature dealing with some of the critical issues in all areas of special education.
- EEX 6524 Organization and Collaboration in Special Ed.** 3 cr (3,0)
PR: C.I. The course is designed to address evaluation, assessment, personnel resource, grant writing and other administrative issues. Collaborative models of intervention and service delivery are presented.
- EEX 6612 Methods of Behavioral Management** 3 cr (3,0)
Analysis of the principles of behavior management and precision teaching and application of these principles to the solving of classroom management problems.
- EEX 6863 Supervised Teaching Practicum with Exceptional Children** 2-7 cr (12-40)
PR: Bachelor's degree, approved program and C.I. Supervised observation and teaching of an exceptional student.
- EGC 5005 Introduction to the Counseling Profession** 3 cr (3,0)
PR: Completion of Phase II of Education Professional Preparation or C.I. Overview of the philosophy, organization, administration and the roles of counselors in various work settings
- EGC 5036 Guiding Human Relationships** 3 cr (3,0)
PR: Senior standing or Basic Teacher Certificate. Human relationship skills which will enhance intra- and inter-personal relating skills in classrooms.
- EGC 6045 Counseling with Children and Adolescents** 3 cr (3,0)
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.
- EGC 6055 Student Personnel Services in Higher Education** 3 cr (3,0)
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.
- EGC 6057 The College Community and the Student** 3 cr (3,0)
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.

EGC 6215 Individual Psycho-Educational Testing I 3 cr (3,0)

An overview of appraisal instruments for individual testing with emphasis on administration, scoring, and interpretation. Designed for practitioners interested in understanding individual assessment.

EGC 6225 Individual Psycho-Educational Testing II 3 cr (3,1)

PR: C.I. Analysis of test theory and practice in administration, scoring, and interpretation of tests assessing achievement, visual-motor and cognitive ability, adaptive behavior and self-concept.

EGC 6235 Procedures for Group Testing 3 cr (2,1)

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.

EGC 6317 Career Development 3 cr (3,0)

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.

EGC 6409 Current Trends in Counseling 3 cr (3,0)

PR: EGC 5005 or 6055 or C.I. Current trends affecting the rapid changes in the counseling field.

EGC 6414 Family Counseling I 3 cr (1,2)

PR: EGC 5005 or EGC 6426, or C.I. Presentation of specific family counseling theories. An evolution and current state of the art.

EGC 6415 Family Counseling II 3 cr (1,2)

PR: EGC 6414, EDF 6481, or C.I. Presentation of techniques to work with entrenched, paradoxical, and "fixed" family systems which pose problems for the family and the Counselor.

EGC 6426 Mental Health Care Systems 3 cr (3,0)

PR: EGC 5005 or C.I. Foundations of mental health counseling including organizational, administration, fiscal and accountability structures.

EGC 6435 Theories of Individual Counseling 3 cr (3,0)

PR: EGC 5005 or EGC 6426, EDF 6481, or C.I. Major theories and approaches to counseling, correlating them with counterpart theories of personality and learning.

EGC 6436 Techniques of Counseling 3 cr (1,2)

PR: EGC 6435 or C.I. The nature of the counseling and its relationships to theoretical concepts.

EGC 6438 Play Process in Counseling with Children 3 cr (3,0)

PR: EGC 6045, 6505, or C.I. Theories and application of the principles of play in the counseling process with children.

EGC 6446 Practicum in Counseling 3 cr (1,3)

PR: EGC 6505 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.

EGC 6461 Counseling Substance Use and Abuse 3 cr (3,0)

PR: EGC 5005 or EGC 6426, 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.

EGC 6463 Counseling Special Populations 3 cr (3,0)

PR: EGC 5005 or EGC 6426 or C.I. Application of counseling principles with various special populations including multicultural subgroups, persons of abuse, exceptional children, gay and lesbian people, etc.

EGC 6500 Guidance and Counseling of Gifted/Talented Individuals 3 cr (3,0)

Guidance and counseling procedures and strategies for gifted/talented students; self-assessment; group dynamics; communication with parents; career goals; alternate educational opportunities.

EGC 6505 Group Procedures and Theories in Counseling 3 cr (3,0)

PR: EGC 6436. 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.

- EGC 6515 Advanced Group Counseling** 3 cr (1,2)
PR: EGC 6505 or C.I. This course is designed to give students practical experience in leading groups. It is also intended to challenge the student to explore professional and advanced issues in group counseling.
- EGC 6606 Organization and Administration of School Counseling and Guidance Programs** 3 cr (3,0)
PR: EGC 5005. In-depth analysis of counseling and guidance programs in schools, including the development and management of comprehensive programs.
- EGC 6706 Consultation, Staffing and Case Management** 3 cr (2,0)
PR: EGC 6505 or C.I. Understanding the counselor's role as consultant and staffing team member. Study of case management procedures.
- EGC 6728 Human Sexuality and Relationships** 3 cr (3,0)
A basic course in understanding how human beings form intra- and interpersonal relationships and how sexuality develops.
- EGC 6785 Ethical and Legal Issues** 3 cr (3,0)
Studies of ethical standards and legal issues in counseling and other human service professions.
- EGC 6946 Counseling Internship** 1-6 cr (1,1-6)
PR: C.I. Supervised placement in setting appropriate for program track. (May be repeated for credit.)
- EGI 6051 Understanding the Gifted/Talented Student** 3 cr (3,0)
A study of characteristics of the gifted/talented students; theories and research; identification procedures; special problems; educational forces.
- EGI 6245 Program Planning and Methodology for Gifted/Talented Students** 4 cr (4,0)
A study of organization, curriculum, strategies and activities for the gifted/talented student; diagnostic teaching; learning-teaching styles; instructional materials; individualized instruction.
- ELD 6112 Foundation and Diagnosis of Learning Disabilities** 4 cr (4,0)
PR: Basic Teacher Certificate or C.I. A study of the history, definition, causes, characteristics and current issues; consideration of diagnostic tests, materials and procedures.
- ELD 6304 Management and Teaching Strategies for the Learning Disabled Student** 4 cr (4,0)
PR: ELD 6112 or C.I. Prescriptive programming of teaching and management techniques based on a diagnosis of basic skill areas of the learning disabled child.
- ELD 6323 Theory and Application for SLD** 3 cr (3,0)
PR: C.I. Systematic programming techniques for Specific Learning Disabilities based on research and diagnostic information with special emphasis on the moderate population.
- ELD 6944 Diagnostic Learning-Disabilities Laboratory** 1 cr (0,1)
A laboratory designed for individual competence measurement of testing-evaluation skills. Must be scheduled concurrently with ELD 6112, Foundations and Diagnosis of LD.
- EME 5051 Technologies of Instruction & Information Management** 3 cr (3,0)
Theories and practices utilizing instructional media and information technologies. Emphasis on new and emerging technologies and their effects on the school and media program.
- EME 5054 Instructional Systems: A Survey of Applications** 3 cr
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 Communication for Instructional Systems—Process** 3 cr (3,0)
Principles of written and oral communications for instructional technologists; development of assertiveness and interpersonal skills; conducting training programs for employees; creating hard copy materials.
- EME 5057 Communication for Instructional Systems—Application** 3 cr (3,0)
PR: EME 5056. Applications of technology, communications theory, platform skills, and instructional design to the effective presentation of training programs and instruction.
- EME 5208 Production Techniques for Instructional Settings** 3 cr (3,0)
Skills in producing instructional materials. Emphasis on graphic, audio, video and photographic skills and the application of instructional and communication theories.

- EME 5225 Media for Children and Young Adults** 3 cr (3,0)
Survey of materials for children's and young adults' informational and recreational needs; analysis, evaluation, and utilization of print and non-print materials.
- EME 5408 Computer Applications in Instructional Technology** 3 cr (3,0)
Techniques and skills for the use of computers for productivity and instruction by the instructional technologist.
- EME 6053 Current Trends in Instructional Technology** 3 cr (3,0)
PR: EME 6613. Survey of current trends and issues of importance to the field of instructional technology.
- EME 6062 Research in Instructional Technology** 3 cr (3,0)
PR: 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 Collection Development Policies and Procedures** 3 cr (3,0)
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 6209 Advanced Production Techniques** 3 cr (3,0)
PR: EME 5208 or EME 5057 or C.I. Advanced skills in graphic, photographic, audio, and video production. Integration of media into instructional packages. Application of instructional development skills and working with clients.
- EME 6313 Media Systems Design** 3 cr (3,0)
PR: EME 5054, EME 6613. Principles of communication, learning theory, and research in instructional technology applied to the design of mediated instructional messages.
- EME 6403 Computer Assisted Instruction** 3 cr
PR: EME 5408. Utilization of commercial authoring systems and authoring languages to produce CAI ranging from drill and practice through simulations. Emphasis upon design and development phases.
- EME 6455 Instructional Applications of Interactive Video** 3 cr (3,0)
PR: EME 5408. Examines videotape and videodisc based interactive video systems as they apply to instructional settings. Requires basic knowledge of computer literacy and instructional design theory.
- EME 6605 Role of the Media Specialist in Curriculum & Instruction** 3 cr (3,0)
PR: EME 5051, EME 5208. Development of skills in instruction and instructional design. Emphasis on teaching, consultation and media skills and curricular involvement of the media specialist.
- EME 6613 Instructional System Design** 3 cr (3,0)
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 Administration of Instructional Systems** 3 cr (3,0)
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 Administrative Principles in Media Centers** 3 cr (3,0)
PR: EME 6605. 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 6805 Organization of Media and Information** 3 cr (3,0)
Methods for organizing print and non-print media, with instruction in cataloging and classification, using standard bibliographic tools and procedures.
- EME 6807 Information Sources and Services** 3 cr (3,0)
Development of skills in identifying appropriate information sources for school media centers, providing reference services, and teaching research skills and search strategies.
- EME 6809 Information Retrieval Systems** 3 cr (3,0)
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.
- EMR 6205 Theory and Application for EMH** 3 cr (3,0)
PR: C.I. Study of various approaches to use in teaching the Educable Mentally Handicapped motor, interpersonal and cognitive skills with special emphasis on the severe and moderate applications.

- EMR 6362 Classroom Organization and Curriculum for Teaching the Mentally Handicapped** 4 cr (4,0)
PR: Basic Teacher Certificate or C.I. Organization, scheduling, materials, equipment, instructional procedures, appropriate curriculum experiences and adjustments, media use, and development prevocational skills for EMH, TMH, and PMH.
- ESE 5214 Secondary School Curriculum Improvement** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Secondary school self-studies for curriculum projects, accreditation reports or staff development.
- ESE 6235 Curriculum Design** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Goal analysis, task analysis, needs assessment and writing performance objectives for developing courses of study.
- ESE 6325 Curriculum Theory** 3 cr (3,0)
PR: Graduate standing or C.I. The foundations, design, constituent parts, development and implementation of change in public school curricula.
- ESE 6416 Curriculum Evaluation** 3 cr (3,0)
PR: ESE 6235, or an equivalent curriculum course.
- EVT 5260 Cooperative Programs in Vocational Education** 2-4 cr (2-4,0)
PR: Basic Teacher Certificate or C.I. Study of cooperative vocational programs and achievement of competencies needed to establish, manage and coordinate co-op program activities in all vocational areas.
- EVT 5315 Applied Clinical Teaching Techniques in Vocational Education** 2-3 cr (2-3,0)
PR: Basic Teacher Certificate or C.I. Study and practice of clinical teaching methods, development of student performance assessment instruments, planning clinical learning experiences, and record-keeping.
- EVT 5316 Clinical Coordination for the Health Occupations Teacher** 2-3 cr (2-3,0)
PR: Basic Teacher Certificate or C.I. Development of clinical guidelines, resources, student schedules, and risk-management programs. Includes negotiating clinical contractual agreements and planning field supervision.
- EVT 5561 Student Guidance in the Vocational Program** 2-3 cr (2-3,0)
PR: Basic Teacher Certificate or C.I. Achievement of skills used by teachers as they gather student data, confer with students and help students plan for employment or further education.
- EVT 5564 Student Vocational Organizations** 2-3 cr (2-3,0)
PR: Basic Teacher Certificate or C.I. Competencies needed by vocational teachers as they establish and supervise student vocational organizations in secondary and post-secondary schools.
- EVT 5817 Management of Vocational Programs** 2-4 cr (2-4,0)
PR: Basic Teacher Certificate or C.I. Study and achievement of selected competencies needed by vocational teachers, supervisors and local administrators in the management of vocational education programs in the schools.
- EVT 6264 Administration in Vocational Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Administrative responsibilities in a local program of Vocational Education which includes two or more fields of occupational education.
- EVT 6265 Supervision in Vocational Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Supervisory techniques for planning and implementing improvement of staff, curriculum and personal relations in Vocational Education.
- EVT 6267 Vocational Program Planning, Development and Evaluation** 2-4 cr (2-4,0)
PR: Basic Teacher Certificate or C.I. Achievement of selected teacher competencies related to program objectives, courses of study, long range plans and techniques for evaluating vocational program effectiveness.
- EVT 6664 School/Community Relations for Vocational Education** 2-4 cr (2-4,0)
PR: Basic Teacher Certificate or C.I. Achievement of proficiency in the use of media techniques to promote the vocational program. Development and maintenance of productive relationships between school and community groups.
- EXP 5445 Psychology of Learning and Motivation** 3 cr (3,0)
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.

- HSC 6132 Health Care Finance** 3 cr (3,0)
PR: ACC 5004, FIN 5405, Graduate status. The identification of resources available to health care institutions, allocation of resources and control of resource expenditures.
- HSC 6153 Case Studies in Health Law** 3 cr (3,0)
PR: Graduate status or C.I. Health law including patient care, liability, malpractice, workmen's compensation, and legal responsibilities of health personnel.
- HSC 6392 Issues and Trends in the Health Professions** 3 cr (3,0)
PR: Graduate status or C.I. Exploration of current status, issues, problems and future trends in the practice and education of health professions.
- HSC 6402 Environmental Health** 3 cr (3,0)
PR: Graduate status or C.I. Recognition and evaluation of control problems arising from environmental contamination, which includes safe water supply, waste disposal, and food resources.
- HSC 6412 Epidemiology** 3 cr (3,0)
PR: Graduate status or C.I. A study of the distribution and determinants of diseases and injuries in human populations.
- HSC 6513 Principles and Practice of Medicine** 3 cr (3,0)
PR: Graduate status or C.I. A comprehensive survey of medicine.
- HSC 6605 Health and Society** 3 cr (3,0)
PR: Graduate status or C.I. Understanding health and illness as defined by patients, providers, and other persons in the social system.
- HSC 6911 Scientific Inquiry in the Health Profession** 3 cr (3,0)
PR: Graduate status or C.I. Research design and evaluation in health professions.
- INP 6317 Organizational Psychology and Motivation—See College of Arts and Sciences, Department of Psychology**
- LAE 5319 Methods of Elementary School Language Arts** 3 cr (3,0)
Principles, procedures, organization and current practices in reading, writing, listening and talking.
- LAE 5415 Children's Literature in Elementary Education** 3 cr (3,0)
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 Literature for Adolescents** 3 cr (3,0)
PR: Senior standing or C.I. Selecting and evaluating books for adolescents with emphasis on the use of literature in the development of young people.
- LAE 6467 Studies in Adolescent Literature** 3 cr (3,0)
Analysis of major works in genre, examination of criticism, instructional strategies, and research in teaching adolescent literature.
- LAE 6637 Research in Teaching** 3 cr (3,0)
Examination and interpretation of major research in English Education. Design of models for research in language instruction in secondary schools.
- LAE 6616 Trends in Language Arts Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Historical development and trends; English usage systems; materials; instructional strategies.
- LAE 6714 Investigation in Children's Literature** 3 cr (3,0)
PR: A previous survey course in children's literature. Learning through the utilization of children's literature; literature analysis and evaluation; story telling; visual and reference materials.
- LEI 6443 Recreation** 3 cr (2,1)
A comprehensive study of public, private and school recreation programs.
- MAE 5318 Current Methods in Elementary School Mathematics** 3 cr (3,0)
Strategies of instruction of computation and concepts of number, geometry and measurement. Instructional materials. (Meets Elementary Education certification requirements.)

- MAE 5325 Teaching Mathematics in the Middle/Junior High School** 3 cr (3,0)
PR: 12 semester hours of mathematics including at least College Algebra. Consideration of the curriculum and instructional techniques appropriate for students in Middle/Junior High School.
- MAE 5356 Teaching General Mathematics in the Secondary School** 3 cr (3,0)
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 Teaching Measurement in Schools** 3 cr (3,0)
Metric system, methods of developing different measurement skills and concepts and curriculum changes needed to accommodate measurement.
- MAE 5637 Laboratory Programs in Mathematics** 3 cr (2,1)
PR: Basic Teacher Certificate or C.I. Design and development of special materials and projects for mathematics independent study. Emphasis teaching and applying the metric system.
- MAE 6145 Mathematics Curriculum, K-12** 3 cr (3,0)
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 6336 Teaching Advanced Mathematics in the Secondary School** 3 cr (3,0)
PR: MAE 3330 or C.I. This course addresses topics in a pre-calculus, analysis or calculus course.
- MAE 6337 Teaching Algebra in the Secondary School** 3 cr (3,0)
PR: MAE 3330 or C.I. This course addresses specific techniques for developing algebra skills for pre-algebra through pre-calculus algebra needs. Logical deductions, problem solving, computer applications and innovative methods are explored.
- MAE 6338 Teaching Geometry in the Secondary School** 3 cr (3,0)
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 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. The study of techniques for diagnosis and remediation of difficulties in mathematics.
- MAE 6641 Problem Solving and Critical Thinking Skills** 3 cr (2,1)
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 Using Technology in the Instruction of K-12 Mathematics** 3 cr (3,0)
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 Seminar in Teaching Mathematics** 3 cr (3,0)
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 Seminar on Research in Mathematics Education** 3 cr (3,2)
PR: Doctoral standing.
- MUE 5611 Trends in Elementary School Music Education** 3 cr (3,0)
PR: MUE 3401 or equivalent or C.I. Advanced study of instructional strategies and materials; integration of music education experiences with classroom activities; personal musical skill development; current research and new curricula.
- MUE 5695 Trends in Arts Education** 3 cr (3,0)
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 Teaching Performing Organizations** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Techniques and skills for the planning, administering and directing performing music organizations. Examination of historical and philosophical foundations of music education.

- MUE 6349 Advanced General Music** 3 cr (3,0)
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 Practicum in Music Education** 3 cr (0,14)
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.)
- MUT, MVB, MVK, MVP, MVS, MVV, MVW - See College of Arts & Sciences, Department of Music**
- PET 6040C Analysis of Human Performance** 3 cr (2,1)
Analytical techniques of kinesiology and their methods of application to individual and team activities.
- PET 6085 Personal and Organizational Wellness** 3 cr (3,0)
Professional implications of the U.S. Wellness Movement and assessment of the nature and quality of corporate and other instructional programming.
- PET 6086 Exercise Intervention and Risk Hazards** 3 cr (3,0)
Prevention of select major risk hazards through exercise intervention.
- PET 6088 Wellness Development in Children** 3 cr (3,0)
An analysis of Wellness characteristics and concepts as they affect the wellness of children.
- PET 6238C Perceptual Motor Development** 3 cr (2,1)
Theoretical and laboratory study of the relationship between perceptual motor development and learning. Special attention is given to identifying and remediating motor deficit.
- PET 6367 Physical Performance and Energy Supplies** 3 cr (3,0)
The relation of nutrients to aerobic performance.
- PET 6377 Physiology of Neuromuscular Mechanisms** 3 cr (3,0)
Human body morphology and function critical in producing motion, strength, power, and endurance.
- PET 6386C Environmental Exercise Physiology** 3 cr (3,2)
A study of physiological adaptation resulting from prescribed physical activity programs.
- PET 6388 Exercise Physiology and Cardiovascular Disease Prevention** 3 cr (3,0)
The physiology of exercise as it affects the onset of cardiovascular diseases.
- PET 6416 Administration of Corporate Wellness Programs** 3 cr (3,0)
Administrative implications for the development of a corporate wellness program.
- PET 6515C Measurement in Kinesiology and Physical Education** 3 cr (3,0)
Techniques of measurement and evaluation of human performance and their applications to physical education.
- PET 6615 Psychomotor Assessment of Exceptional Children** 2 cr (2,1)
PR: PET 6655 or C.I. Assessment techniques and methodology for determining psychomotor needs of exceptional children is presented. Application of competencies is required.
- PET 6645 Advanced Studies in Adapted Physical Education** 3 cr (3,1)
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 Methods and Curriculum in Adapted Physical Education** 4 cr (3,1)
PR: PET 6645, PET 6655, PET 6615. Individualized educational and developmental programming for exceptional children. Models of service delivery and instruction are presented. Practicum required.
- PET 6647 Program Development in Adapted Physical Education** 3 cr (3,1)
PR: C.I. Development of appropriate physical education programs for exceptional children. Course includes teacher-consultant, collaboration, inservice training, legislative issues, resource utilization.
- PET 6655 Developmental Aspects of Motor Disabilities** 3 cr (3,1)
PR: C.I. Course addresses developmental aspects of motor and health disabilities. A developmental focus is presented. Observation required.

- PET 6910 Problem Analysis - Review of Literature** 3 cr (3,0)
PR: EDF 6432 and C.I. Comprehensive review of literature related to a selected topic in physical education; identification, analysis and evaluation of developments, issues and research problems. (May be repeated for credit.)
- RED 5147 Developmental Reading** 3 cr (3,0)
Principles, procedures, organization and current practices in the elementary reading program. Materials and methods of instruction.
- RED 5514 Classroom Diagnosis and Development of Reading Proficiencies** 3 cr (3,1)
PR: RED 5147 or equivalent. Classroom diagnosis and corrective teaching in reading; instructional materials. Case study required.
- RED 6116 Trends in Reading Education** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Analysis of historical development and current trends; management systems; instructional strategies and investigation of research.
- RED 6336 Reading in the Content Areas** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Identification and evaluation of reading skills, diagnosis of reading problems and development of methods and materials to increase student reading performance.
- RED 6337 Reading in the Secondary School** 3 cr (3,0)
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 Management of Reading Programs** 3 cr (3,0)
Overview of K-12 reading instruction goals and program management models; role of reading supervisor and in-service needs assessment and delivery.
- RED 6845 Advanced Evaluation and Instruction in Reading** 3 cr (3,0)
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 Reading Practicum** 6 cr (0,6)
PR: RED 6845 or C.I. Evaluation and instructional practices for individualization of reading instruction in a laboratory setting. Parent interview and case report.
- SCE 5716 Methods in Elementary School Science** 3 cr (3,0)
Organization of instruction in elementary school science including methods, evaluation, materials, strategies, and current practices.
- SCE 5825 Space Science for Educators** 3 cr (3,0)
PR: Senior Standing or C.I. Introduction to space science, manned space flight and space education curriculum.
- SCE 6238 Inquiry in the Sciences** 3 cr (3,1)
PR: Graduate standing or science certification. Teaching science by inquiry in the secondary school and development of inquiry lessons.
- SCE 6237 Science Programs in Secondary School** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Study of historical development and current trends; analysis of science curricula, materials.
- SCE 6616 Trends in Elementary School Science Education** 3 cr (3,0)
PR: Basic Teacher Certification or C.I. Study of historical development and current trends; analysis of science curricula, materials.
- SPS 6601 Introduction to Psychological Services in Schools** 3 cr (3,1)
PR: Graduate admission and C.I. A course presenting an overview of the philosophy, organization, programs and operation of school psychological services.
- SPS 6606 School Consultation Techniques** 3 cr (3,0)
PR: C.I. Theories and models of school consultation and clinical practice in the consultative role. (Three hours required.)
- SPS 6608 Seminar in School Psychology** 3 cr (3,0)
PR: C.I. Diagnostic, instructional and prescriptive intervention techniques.
- SPS 6125 Infant Development Assessment** 2 cr (2,1)
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 Multicultural Issues and Assessment **2 cr (2,1)**

PR: Graduate admission and C.I. An investigation of some of the major multicultural issues with emphasis on administration, scoring and interpretation of instruments related to this population.

SPS 6191 Psycho-Educational Diagnosis I **3 cr (3,1)**

PR: Graduate admission and C.I. Measurement of intellectual and cognitive functioning of children and adults. Administration, scoring and interpretation of Wechsler scales and selected psychometric instruments.

SPS 6192 Psycho-Educational Diagnosis II **3 cr (3,1)**

PR: Graduate admission and C.I. 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 6946 Practicum in School Psychology **1 cr (0,1)**

SPS 6949 School Psychology Internship **2-6 cr (0,2-6)**

PR: Graduate admission and C.I. Supervised placement in school setting.

SSE 5113 Methods in Elementary School Social Science **3 cr (3,0)**

Study of instructional programs in social sciences; objectives; materials; techniques; current research; and their application in elementary school setting.

SSE 6617 Trends in Elementary School Social Studies Education **3 cr (3,0)**

PR: Basic Teacher Certificate or C.I. Historical development and current trends, strategies for inquiry instruction, intellectual, social and personal dimensions of social studies.

SSE 6636 Contemporary Social Science Education **3 cr (3,0)**

PR: Basic Teacher Certificate of C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.

TSL 5140 ESOL Strategies **3 cr**

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.

ARE, EDA, EDE, EEX, EGC, EME, ESE, EVT, MAE, MUE, PET, RED or SPS prefixes are used for the following:

6971 Treatise

EDG, EGC, EME, MAE, MUE, PET, or RED prefixes are used for the following:

6946 Practicums, Clinical Practice

EDA or EDG prefixes are used for the following:

7980 Doctoral Dissertation

interpretation of instruments assessing cognitive, visual-motor ability and adaptive behavior to pre- and primary school children	
SPS 8175 Multicultural Issues and Assessment	3 cr (3,7)
PR: Graduate admission and C.I. An investigation of some of the major multicultural issues with emphasis on administration, scoring and interpretation of instruments related to this population.	
SPS 8181 Psycho-Educational Diagnosis I	3 cr (3,7)
PR: Graduate admission and C.I. Measurement of intellectual and cognitive functioning of children and adults. Administration, scoring and interpretation of Wechsler scales and selected psychometric instruments.	
SPS 8182 Psycho-Educational Diagnosis II	3 cr (3,7)
PR: Graduate admission and C.I. 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 8248 Practicum in School Psychology	1 cr (0,1)
SPS 8248 School Psychology Internship	2-8 cr (0,2-6)
PR: Graduate admission and C.I. Supervised placement in school setting.	
SPS 8119 Methods in Elementary School Social Science	3 cr (3,0)
Study of instructional programs in social sciences; objectives, methods, techniques; current research; and their application in elementary school setting.	
SPS 8817 Trends in Elementary School Social Science Education	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Historical development and current trends; strategies for inquiry; instructional, social and personal dimensions of social studies.	
SPS 8828 Contemporary Social Science Education	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.	
TEL 5149 ESOL Strategies	3 cr
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.	
ARE, EDA, EDE, EEX, EEC, EME, ESE, EVT, MAE, MUE, PET, RED or SPS prefixes are used for the following:	
9371 Thesis	
EDS, EDC, EME, MAE, MUE, PET or RED prefixes are used for the following:	
8849 Practicum, Clinical Practice	
EDA or EDC prefixes are used for the following:	
7880 Doctoral Dissertation	

COLLEGE OF ENGINEERING

ADMINISTRATION

G.E. Whitehouse, Ph.D., P.E.	Dean
S.L. Rice, Ph.D., P.E.	Associate Dean
R.N. Miller, Ph.D., P.E.	Associate Dean
F.S. Gunnerson, Ph.D., P.E.	Director of Graduate Affairs
J.K. Beck, P.E.	Director of Undergraduate Affairs

The College of Engineering offers graduate programs leading to Masters and Doctor of Philosophy (Ph.D.) degrees. Each department within the college offers options for specialized education.

Department of Civil and Environmental Engineering (CEE)

- Civil Engineering
- Environmental Engineering
- Environmental Sciences
- Structures and Foundations
- Transportation Systems
- Water Resources

Department of Electrical Engineering (EE)

- Communications
- Controls
- Digital Signal Processing
- Electronics
- Electro-Optics
- Electromagnetics
- Microelectronics

Department of Computer Engineering (CpE)

- Computer Engineering
- Computer Systems
- Engineering System Analysis

Department of Industrial Engineering & Management Systems (IEMS)

- Computer Integrated Manufacturing
- Engineering Management
- Industrial Engineering
- Manufacturing Engineering
- Operations Research
- Product Assurance Engineering
- Simulation Systems

Department of Mechanical and Aerospace Engineering (MAE)

- Aerospace Systems
- Materials Science & Engineering
- Mechanical Systems
- Thermo-Fluids

COLLEGE ADMISSION REQUIREMENTS

In addition to meeting the minimum university criteria, each applicant is required to satisfy college and department admission requirements. Specific department requirements are listed in each departmental section. Meeting the admissions requirements does not automatically guarantee admission, particularly to the doctoral programs, since enrollments may be restricted by limited college or department resources.

Masters Programs Admission Requirements:

1. A minimum GPA of 2.8 or better during the last two years of undergraduate degree work (independent of the GRE score) is required.
2. Applicants for Masters programs must present baccalaureate credentials appropriate to the specialized area of study including mathematics through differential equations.
3. All applicants whose native language is not English must score at least 550 on the TOEFL test.

Doctoral Programs Admission Requirements:

1. Each applicant is expected to have a masters degree in engineering (or related discipline) awarded by a recognized institution and meet the departmental admission requirements.
2. 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 masters degree.

COLLEGE DEGREE REQUIREMENTS

In addition to meeting the minimum university criteria (see **University Graduate Regulations**), each degree candidate must also satisfy college and department degree requirements. Specific department requirements are listed in respective departmental sections.

Thesis Option, Masters Degree Requirements

1. A minimum of thirty semester hours of approved course work including six hours of thesis credits is required.
2. No more than six hours of thesis credits will be applied toward degree requirements.
3. At least 15 credit hours must be from 6000-level courses.
4. A maximum of 9 semester hours of graduate credit may be transferred into the program from UCF post-baccalaureate or SUS work. Transfer credits taken at other institutions, not in the SUS, are limited to 6 semester hours. Only grades of 'B' or better can be transferred.
5. A maximum of 6 credits of 4000-level courses may be applied toward a masters degree, 3000-level courses are not acceptable.
6. A minimum 'B' average must be maintained in the program of study and no more than two 'C' grades are allowed.
7. A written thesis and final oral defense are required.
8. A maximum of 6 semester hours of Independent Study may be used toward the degree. Directed research credits may not be applied toward the degree.

Non-Thesis Option, Masters Degree Requirements

Most departments within the College of Engineering offer a 36 semester hour, non-thesis option intended primarily for part-time students. The program requirements are the same as for the thesis option except that the thesis requirement is replaced by 12 credit hours of course work. An end-of-program comprehensive examination, oral or written, is required.

Doctoral Degree Requirements

1. A minimum of 84 semester hours beyond the baccalaureate degree, including 24 semester hours of dissertation credits, are required.
2. At least 6 semester hours of course work outside the College of Engineering and no more than 12 hours of independent study may be used to satisfy degree requirements.
3. Up to 36 semester hours of credit, including a maximum of 6 credits of thesis, may be transferred from the masters program. There is no limit on the number of post-masters credits that may be transferred into the Ph.D. program. The transfer credits from the masters degree or post-masters work will consist of a maximum of 6 hours of 4000-level work, no 3000-level courses, and no courses with grades less than 'B'.
4. A written dissertation and final oral defense are required.

FEEDS (Florida Engineering Education Delivery System)

FEEDS is a Florida statewide system whereby graduate level engineering courses are delivered via video tape to cooperating university centers and selected industrial sites. Most graduate courses offered each semester are available through FEEDS. A student taking courses through FEEDS must meet the same requirements as a student on campus and will earn the same credit as if attending on campus. Courses delivered by the system may contribute to graduate degrees in engineering.

A student need not be enrolled in a graduate degree program in order to take a FEEDS course. 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 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) 823-2455.

CIVIL AND ENVIRONMENTAL ENGINEERING

<i>D.L. Block, Ph.D., P.E.</i>	FSEC Director & Professor
<i>W.F. Carroll, Ph.D., P.E.</i>	Professor
<i>C.D. Cooper, Ph.D., P.E.</i>	Professor
<i>J.P. Hartman, Ph.D., P.E.</i>	Graduate Coordinator & Professor
<i>D.R. Jenkins, Ph.D., P.E.</i>	Professor
<i>R.D. Kersten, Ph.D., P.E.</i>	Professor
<i>A.E. Radwan Ph.D., P.E.</i>	Chair & Professor
<i>J.S. Taylor, Ph.D., P.E.</i>	Professor
<i>M.P. Wanielista, Ph.D., P.E.</i>	Professor
<i>Y.A. Yousef, Ph.D., P.E.</i>	Professor
<i>J.D. Dietz, Ph.D., P.E.</i>	Associate Professor
<i>C.M. Head, Ph.D., P.E.</i>	Associate Professor
<i>S.S. Kuo, Ph.D., P.E.</i>	Associate Professor
<i>D.S. Leftwich, Ph.D., P.E.</i>	Associate Professor
<i>S.K. Kunnath, Ph.D., P.E.</i>	Assistant Professor
<i>D.R. Reinhart, Ph.D., P.E.</i>	Assistant Professor
<i>R.L. Wayson, Ph.D., P.E.</i>	Assistant Professor

Civil Engineering

Graduate work and research in Civil Engineering reflect 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, construction engineering, and water resources. Faculty research interests include geotechnical studies of subsurface conditions. Other geotechnical interests relate to soil testing and design of advanced testing devices. Research in transportation is carried out through the Transportation Systems Institute. In the structures area, research interests include structural dynamics, structural testing, and mechanics of composite structural materials. 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

Strong faculty research interests have resulted in a program of distinction for the college and the university. Research monies support students in the general areas of water treatment, wastewater treatment, solid and hazardous waste management, atmospheric pollution control, community noise prediction/abatement, and stormwater management. The research results of faculty members have been applied to social problems; however, basic research is conducted as well.

Students with strong science or engineering backgrounds have a variety of research areas and levels of interest which they can pursue. Those completing the program find job opportunities in federal, state and local governments, consulting and industry. The Environmental Engineering program concerns itself with prevention and correction of pollution effects on the natural and man-made environments.

Degree Programs

The Civil and Environmental Engineering Department offers the Master of Science in Civil Engineering (MSCE), Environmental Engineering (MSEnvE), and the Master of Science (MS) degree in Structures and Foundations, Transportation Systems, Environmental Sciences and Water Resources. The MS degree programs are designed primarily for students who have not received an undergraduate degree in engineering. The Department also offers Doctor of Philosophy (Ph.D.) degrees in Civil and Environmental Engineering.

All student programs of study must have no more than 6 hours of 4XXX level courses. More than one-half of the courses must be in the 6XXX level. The State University System of Florida requires that the student take the Graduate Record Examination (GRE, aptitude section only), prior to being admitted as a regular graduate student.

There are two options for the master degree program, the thesis option and the research report option. The thesis option requires a thesis that is equivalent to 6 hours out of a total of 30 hours. It is the required option for students on contracts and grants as well as any student receiving department financial support.

The research report option requires a research report that is equivalent to 3 hours out of a total of 33 hours. This option is primarily suitable for part-time, non-resident students. The research report should meet thesis publication guidelines.

Master of Science in Civil Engineering (M.S.C.E.)

The Department offers a Master of Science in Civil Engineering (M.S.C.E.) degree for students who have an undergraduate degree in Civil Engineering or another closely related field of engineering. The degree requires 33 semester hours of acceptable graduate work which includes a Research Report (3 semester hours) or 30 semester hours of acceptable graduate work which includes a Thesis (6 semester hours). The student develops an individual program of study with a Faculty Advisor.

CORE Courses

15 Semester Hours

CES	6606	Steel Design	
or CES	6706	Concrete Design	3 hours
CES	5141	Matrix Structural Analysis	
or CEG	6115	Foundation Engineering	3 hours
CEG	5015	Geotechnical Engineering II	3 hours
TTE	5204	Traffic Engineering	
or TTE	5805	Geometric Design of Transportation Systems	3 hours
CWR	6235	Open Channel Hydraulics	3 hours
or CWR	5205	Hydraulic Engineering	3 hours

Courses which comprise the remaining part of the program are selected in accordance with the general graduate requirements of the College of Engineering, and typically are taken from the following two Civil Engineering sub-discipline areas:

Sub-Disciplines

15 or 9 Semester Hours

Structural/Geotechnical:

CES 6116 Finite Elements in Struc	3 hours
CEG 6129 Plates and Shells	3 hours
CES 6209 Dynamics of Structures	3 hours
CES 6218 Structural Stability	3 hours
TTE 5835 Pavement Design	3 hours
CGN 6425 Mathematical Modeling	3 hours
CEG 6065 Soil Dynamics	3 hours
CEG 6317 Theor. Geot. Engr	3 hours
CEG 6415 Seepage Analysis	3 hours
CWR 6125 Groundwater Hydrology	3 hours
Others by Advisor's Consent	

Transportation/Construction

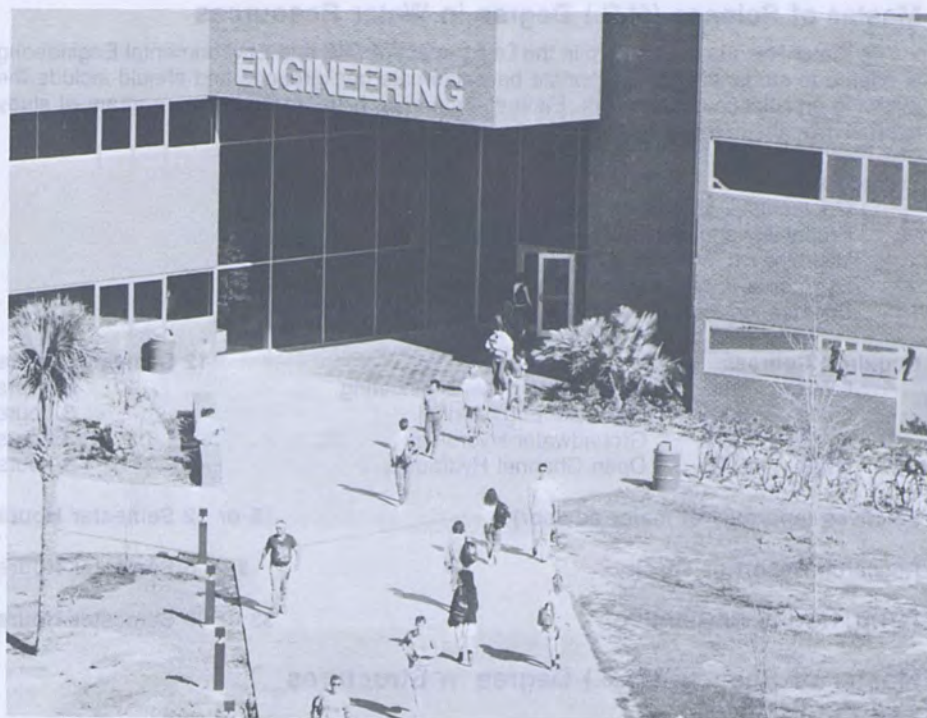
CCE 5005 Const Engr II	3 hours
CCE 5035 Const Law & Pro Mgmt	3 hours
TTE 5835 Pavement Design	3 hours
CCE 6505 Const Bldg Sys Tech	3 hours
CCE 6506 Const Netwkg Tech	3 hours
CGN 6606 Public Works Engrng	3 hours
CGN 6655 Region Plan Des/Dev	3 hours
TTE 6526 Plan/Design of Airports	3 hours
TTE 6625 Mass Trans Systems	3 hours
Others by Advisor's Consent	

Research Report or Thesis

3 or 6 Semester Hours

TOTAL HOURS REQUIRED

33 or 30 Semester Hours



This option is offered by the Department of Civil and Environmental Engineering to students with appropriate baccalaureate backgrounds which includes discussion and coursework as follows:

Articulation (as approved by the student's advisor and committee):
 Mathematics through Differential Equations (MAP 3302)
 Probability and Statistics (STA 3032)
 Engineering Analysis with Computers (EGN 4634)

Master of Science (M.S.) Degree in Transportation Systems

The Transportation Engineering program in the Department of Civil and Environmental Engineering offers a Master of Science (M.S.) degree in Transportation Systems to students with appropriate baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

Prerequisites

Probability and Statistics (STA 3032)
 Operations Research (EGN 4634)
 Transportation Engineering (TTE 4004)
 Mathematics through Differential Equations (MAP 3302)

Required Courses

			15 Semester Hours
TTE	5204	Traffic Engineering	3 hours
TTE	5205	Highway Capacity	3 hours
TTE	5805	Geometric Design Systems of Transportation	3 hours
TTE	6625	Mass Transportation Systems	3 hours
TTE	6526	Planning and Design of Airports	3 hours

Electives

15 or 9 Semester Hours

Research Report or Thesis
 TOTAL HOURS REQUIRED

3 or 6 Semester Hours
 33 or 30 Semester Hours

Master of Science (M.S.) Degree in Water Resources

The Water Resources program in the Department of Civil and Environmental Engineering is offered to students with appropriate baccalaureate backgrounds and should include the following articulation course work. Each student must have an individual program of study approved by their faculty committee.

Prerequisites

Geotechnical Engineering (CEG 4101C)
Probability and Statistics (STA 3032)
Hydrology (CWR 4101)
Hydraulics (CWR 4201)
Engineering Economics (EGN 3613)

Required Courses

		12 Semester Hours
CWR	5545 Water Resources Engineering	3 hours
CWR	5205 Hydraulic Engineering	3 hours
CWR	6125 Groundwater Hydrology	3 hours
CWR	6235 Open Channel Hydraulics	3 hours

Electives (approval of major advisor)

18 or 12 Semester Hours

Research Report or Thesis

3 or 6 Semester Hours

TOTAL HOURS REQUIRED

33 or 30 Semester Hours

Master of Science (M.S.) Degree in Structures and Foundations

This option is offered by the Department of Civil and Environmental Engineering to students with appropriate baccalaureate backgrounds which includes articulation and coursework as follows:

Articulation (as approved by the student's advisor and committee)

Mathematics through Differential Equations (MAC 3311-13, MAP 3302)
Probability and Statistics (STA 3032)
Engineering Analysis with Computers (EGN 3420)
Engineering Economics (EGN 3613)
Physics I with Calculus (PHY 3048)
Engineering Analysis - Statics and Dynamics (EGN 3310, EGN 3321)
Mechanics of Materials (EGN 3331)
Structural Engineering Analysis (CES 4102)
Structural Steel Design (CES 4605)
Structural Concrete Design (CES 4709)
Geotechnical Engineering I (CEG 4101)
Fluid Mechanics (EGN 3353)
Hydraulics (CWR 4201)
Engineering and the Environment (EGN 3704)

Required Courses

(take 5 of these 6 courses)

		15 Semester Hours
CEG	5015 Geotechnical Engineering II	3 hours
CEG	6065 Soil Dynamics	3 hours
CEG	6115 Foundation Engineering	3 hours
CES	5143 Matrix Structural Analysis	3 hours
CES	6606 Steel Design	3 hours
CES	6706 Concrete Design	3 hours

Option Courses		(with Thesis) (with Research Report)	9 Semester Hours 15 Semester Hours
CEG	6317	Theoretical Geotechnical Engineering	3 hours
CEG	6415	Seepage Analysis	3 hours
CES	6116	Finite Elements in Structures	3 hours
CES	6129	Plates and Shells	3 hours
CES	6218	Structural Stability	3 hours
TTE	5835	Pavement Design	3 hours

(Plus the course not chosen as required or other courses as approved by the student's advisor and committee)

Thesis	6 Semester Hours
Research Report	3 Semester Hours

TOTAL HOURS REQUIRED **33-30 Semester Hours**

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

The Department of Civil and Environmental Engineering offers a Master of Science Degree in Environmental Engineering (M.S.Env.E.) degree for students who have an undergraduate degree in Environmental Engineering or any other closely related field of engineering and thus, requires a minimum of articulation. The student works out an individual program of study with a Faculty Advisor to make sure that all prerequisites are met.

CORE Courses		15 Semester Hours
CWR	5545	Water Resources Engineering 3 hours
ENV	6015	Physical/Chemical Treatment Systems 3 hours
ENV	6016	Biological Treatment Systems 3 hours
ENV	6558	Industrial Waste Treatments 3 hours
ENV	6106	Atmospheric Dispersion Modeling 3 hours
		or
ENV	6126	Design of Air Pollution Controls 3 hours

Additional courses which comprise the remaining part of the program are selected in accordance with the general M.S.E. requirements of the College of Engineering and often include courses taken from the following two Environmental Engineering sub-discipline areas:

Sub-Discipline Areas **15 or 9 Semester Hours**

Environmental

ENV 5415 Potable Water	3 hours
ENV 5615 Impact Assessment	3 hours
ENV 6055 Surface Contaminations	3 hours
ENV 6347 Hazardous Waste Inc	3 hours
ENV 6519 Aquatic Chem Process	3 hours
ENV 6616 Receiving Water Impacts	3 hours
ENV 5505 Sludge Management	3 hours
ENV 5335 Hazardous Waste Mgmt	3 hours
Others by Advisor's Consent	

Water Resources

CWR 5205 Hydraulic Engineering	3 hours
CWR 6125 Groundwater Hydrology	3 hours
CWR 6235 Open Channel Hydraulics	3 hours
CWR 6425 Mathematical Modeling	3 hours
CEG 6415 Seepage Analysis	3 hours
Others by Advisor's Consent	

Research Report or Thesis

3 or 6 Semester Hours

TOTAL HOURS REQUIRED

33 or 30 Semester Hours



Master of Science (M.S.) Degree in Environmental Sciences

This option, offered by the Department of Civil and Environmental Engineering, is offered to students with appropriate science baccalaureate degrees. The student entering this program should have background (or articulation course work) in the following areas:

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Fluid Mechanics (EGN 3353)
 Engineering and Environment (EGN 3704)
 FORTRAN Programming (COP 3215)
 Engineering Economics (EGN 3613)
 Probability and Statistics (STA 3032)
 Environmental Engineering - Process Design (ENV 4561)
 Chemical Process Control (EES 4202)
 Biological Process Control (EES 4111)
 Atmospheric Pollution Control (ENV 4121)
 Hydrology (CWR 4101)
 Hydraulics (CWR 4201)
 Solid and Hazardous Wastes (ENV 4341)

Required Courses

			12 Semester Hours
CWR	5545	Water Resources Engineering OR	3 hours
CWR	6235	Open Channel Hydraulics OR	3 hours
CWR	6125	Groundwater Hydrology	3 hours
ENV	6015	Physical/Chemical Treatments Systems OR	3 hours
ENV	6016	Biological Treatment Systems OR	3 hours
ENV	6558	Industrial Waste Treatment	3 hours
ENV	6106	Atmosphere Pollution Control OR	3 hours
ENV	6126	Design of Air Pollution Controls	3 hours
ENV	5615	Environmental Impact Assessment OR	3 hours
ENV	6615	Receiving Water Impacts OR	3 hours
ENV	6519	Aquatic Chemical Processes	3 hours

Electives

Research Report or Thesis

18-12 Semester Hours

3 or 6 Semester Hours

The remaining course work is selected from sub-discipline courses

TOTAL HOURS REQUIRED

33 or 30 Semester Hours

DOCTOR OF PHILOSOPHY/Ph.D.

The Ph.D. degree is primarily intended for a student with a Master's degree in Civil or Environmental Engineering or a closely related discipline. The Civil Engineering program is intended to allow a student to study in depth, with emphasis on research, structural analysis and design, geotechnical engineering and foundations, transportation planning and operations, and water resources. The Environmental Engineering program is intended to allow a student to study and conduct research in the general areas of water treatment, waste water treatment, solid and hazardous waste management, atmospheric pollution control, community noise abatement, and stormwater management.

Admission

In addition to satisfying regular University admissions criteria, the student must have a master's degree in Civil or Environmental Engineering or a closely related discipline from a recognized institution. Prospective applicants should forward a resume and a letter with research interests for department review. In addition, the student must pass a Ph.D. Qualifying Examination in one of the departmental disciplines. This examination is normally taken within the first year of study beyond the master's degree.

Degree Requirements

The Ph.D. degree requires a minimum of 84 semester hours beyond the bachelor's degree, 30 of which will be dissertation credits and at least 9 of which must be graduate level mathematics courses. A maximum of 36 semester hours, including 6 thesis hours, may be transferred from a master's degree toward these requirements. An additional 9 semester hours of post-masters work may be transferred. A program of study must be developed with an advisory committee and meet with departmental approval at the beginning of the Ph.D. program, at which time transfer credit will be evaluated on a course by course basis.

Examinations

In addition to the Qualifying Examination, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of written and oral presentations of a research proposal. The Dissertation Defense Examination is an oral examination taken as defense of the written dissertation.

COMPUTER ENGINEERING

(Administered in the Department of Electrical and Computer Engineering)

C.S. Bauer, Ph.D., P.E.	Professor
A.J. Gonzalez, Ph.D., P.E.	Assistant Chair and Associate Professor
H.I. Klee, Ph.D., P.E.	Associate Professor
D.G. Linton, Ph.D., P.E.	Associate Professor
B.E. Petrasko, D.Eng.	Associate Professor
H.R. Myler, Ph.D., P.E.	Associate Professor
S. Khajenoori, Ph.D.	Assistant Professor
A.R. Weeks, Ph.D.	Assistant Professor
H.L. Williams, Ph.D.	Assistant Professor

In contemporary professional engineering practice, and in research and development activities, there is an increasing need for engineers with a high degree of training and capability in the application of computers and mathematics in the modeling, simulation and solution of complex technical problems.

Graduate study in computer engineering includes course work and research in digital systems, software engineering, expert systems and machine intelligence, image processing, simulation and engineering system analysis.

Degree Programs

The Department of Computer Engineering offers the Master of Science in Computer Engineering (M.S.Cp.E.), the Master of Science degree (M.S.) in Computer Systems, the

Master of Science degree (M.S.) in Engineering Systems Analysis and the Doctor of Philosophy (Ph.D.) degree. The M.S. degree programs are designed primarily for students who have not received an undergraduate degree in computer Engineering or in an area closely related to Computer Engineering.

Master of Science in Computer Engineering (M.S.Cp.E.)

This degree requires a baccalaureate degree in Computer Engineering or in a closely related discipline such as Electrical Engineering. Minimum requirements for regular status are a 3.0 grade point average (GPA) in the last 60 hours of the undergraduate degree program and a minimum of 1000 in the quantitative and verbal portions of the Graduate Record Examination (GRE). For students whose native language is not English, a minimum score of 550 on the TOEFL is required. A post-baccalaureate trial program of 9 semester hours may be allowed for students with a grade point average of less than 3.0 but greater than 2.8.

Degree Requirements

The M.S.Cp.E. degree is offered only as a thesis program. This program requires 30 semester hours, at least half of which must be at the 6000 level and will include 6 hours of thesis credit. The prerequisites for the program are shown below. The CORE requirements for all students will be met by Required Courses. A graduate committee must be formed and a chair chosen before non-CORE courses may be taken. Non-CORE courses taken before a student is in regular status and has a graduate committee may not be accepted towards the M.S.Cp.E.

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Assembly Language Programming (ECM 4508C)
 Probability and Statistics (STA 3032)
 FORTRAN Programming (EGN 3420)
 Digital Logic Circuits (EEL 3342C)

Required Courses (CORE)

9 Semester Hours

ECM	5505	Microcomputer-based Monitoring and Control systems	3 hours
ECM	5806	Software Engineering I	3 hours
ECM	5365	Introduction to Digital Systems	3 hours

Computer Systems (M.S.)

This option (offered by the Department of Computer Engineering) is designed for students with an undergraduate degree in engineering, mathematics, computer science or a basic science. It is available as a thesis or a non-thesis program. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Assembly Language Programming (ECM 4508C)
 Probability and Statistics (STA 3032)
 FORTRAN Programming (EGN 3420)
 Digital Logic Circuits (EEL 3342C)

Required Courses

9 Semester Hours

ECM	5365	Introduction to Digital Systems	3 hours
ECM	5505	Microcomputer-based Monitoring and Control System	3 hours
ECM	5806	Software Engineering I	3 hours

Restricted Electives

Select one of the following groups:

a. Computer Architecture

ECM	6765	Computer Systems Design	3 hours
ECM	6717	Digital computer Systems	3 hours
		or	
ECM	6308	Current Topics in Parallel Processing	3 hours

b. Expert Systems and Machine Intelligence			
ECM	5431	Expert Systems and Knowledge Engineering	3 hours
ECM	5453	Pattern Recognition	3 hours
		or	
ECM	5441	Image Processing	3 hours
c. Software Engineering			
ECM	6807	Software Engineering II	3 hours
ECM	5506	Engineering Applications of Computer Graphics	3 hours
ECM	6426	Continuous System Simulation	3 hours

Electives

12-21 Semester Hours

Engineering Systems Analysis (M.S.)

This program (offered by the Department of Computer Engineering) is designed for students with an undergraduate degree in engineering, mathematics or science with an interest in systems engineering, specifically control and simulation of complex systems. Considerable emphasis is placed on mathematical modeling and techniques for analyzing the behavior of engineering systems. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Engineering Analysis (ECM 3420)
 Engineering Applications of computer Methods (ECM 4301)
 Computer Control Systems (ECM 4723C)

Required Courses

12 Semester Hours

EEL	5173	Signals and Systems	3 hours
EEL	5630	Digital Control Systems I	3 hours
ECM	6426	Continuous Systems Simulation I	3 hours
ECM	6427	Continuous Systems Simulation II	3 hours

Restricted Technical Electives

6 Semester Hours

Choose at least **two** courses:

ECM	6428	Current Issues, In Real-Time Simulation	3 hours
ECM	5431	Expert Systems and Knowledge Engineering	3 hours
EEL	5513	Digital Signal Processing Applications	3 hours
EEL	6621	Nonlinear Control Systems	3 hours
EEL	6671	Modern and Optimal Control Systems	3 hours
ECM	5505C	Microcomputer-based Control Systems	3 hours

Electives

Additional sub-discipline-specialty courses are selected and often include appropriate support courses to meet the individual professional needs of each student.

Doctor of Philosophy (Ph.D.)

The 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, software engineering, expert systems and machine intelligence, image processing and engineering systems analysis.

Admission

Students must satisfy university requirements and have completed a master's degree in Computer engineering or a closely related discipline, with a minimum grade point average (GPA) of 3.5 of a possible 4.0, and a minimum of 1000 on the combined scores of verbal and quantitative portions of the Graduate Record Examination (GRE).

Students are admitted initially on a pre-Ph.D. basis and required to pass a Qualifying Examination. Then the student must form a dissertation committee and submit an approved program of study before being admitted to degree seeking status.

Degree Requirements

The Ph.D. degree requires a minimum of 84 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 a college of engineering. There is a residency requirement of two continuous 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 by course basis. The degree must be completed within seven years from the date of admission to the doctoral program.

Transfer Credits

A limited number of credit hours may be transferred from a master's degree toward these requirements, including a maximum of 6 hours of 4000-level courses; no 3000-level courses; and no courses with grades less than 'B'.

Examinations

In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

ELECTRICAL ENGINEERING

M. Bass, Ph.D.	Vice President for Research & Professor
R.C. Harden, Ph.D.; P.E.	Professor
D.C. Malocha, Ph.D.; P.E.	Professor
B.E. Mathews, Ph.D.	Graduate Coordinator & Professor
W. B. Mikhael, Ph.D.	Professor
M.G. Moharam, Ph.D.	Professor
R.L. Phillips, Ph.D.	Professor
M.J. Soileau, Ph.D.	CREOL Director and Professor
N.S. Tzannes, Ph.D.	Chair & Professor
M. Belkerdid, Ph.D.; P.E.	Associate Professor
G.D. Boreman, Ph.D.; P.E.	Associate Professor
C.G. Christodoulou, Ph.D.	Associate Professor
M. Georgiopoulos, Ph.D.	Associate Professor
K. Guenther, Ph.D.	Associate Professor
J.E. Harvey, Ph.D.	Associate Professor
R. Johnson, Ph.D.	Associate Professor
J.J. Liou, Ph.D.	Associate Professor
R.N. Miller, Ph.D.; P.E.	Assistant Dean & Associate Professor
P.F. Wahid, Ph.D.	Assistant Chair & Associate Professor
Y.A. Alsaka, Ph.D.	Assistant Professor
I. Batarseh, Ph.D.	Assistant Professor
H.K. Brown, Ph.D.	Assistant Professor
J. Dixon, Ph.D.	Assistant Professor
M.G. Harris, D.Sc.; P.E.	Assistant Professor
T. Kasparis, Ph.D.	Assistant Professor
A. Mortazawi, Ph.D.	Assistant Professor
Z. Qu, Ph.D.	Assistant Professor
S. Richie, Ph.D.	Assistant Professor
K.B. Sundaram, Ph.D.	Assistant Professor
M. Sznajder, Ph.D.	Assistant Professor
J.S. Yuan, Ph.D.	Assistant Professor

Joint Appointees:

L.C. Andrews, Ph.D.	Professor of Mathematics
J.K. Kim, Ph.D.	Professor of Physics
A. Miller, Ph.D.	Professor of Physics
M. Richardson, Ph.D.	Professor of Physics
W.T. Silfuast, Ph.D.	Professor of Physics
G. Stegeman, Ph.D.	Cobb-Hooker Professor of Physics
E.W. Van Stryland, Ph.D.	Professor of Physics

The Electrical Engineering Department supports graduate degree programs and research in the major sub-discipline areas of electrical engineering. The faculty include members with national and international reputations in teaching and research. Our facilities are among the best with a modern building and well equipped laboratories.

Research interests of the faculty include antennas, microwave and millimeter wave circuits and devices, communication systems, digital signal/image processing, radar systems, IFF devices, electromagnetic theory, speech processing, VLSI design, spread spectrum systems, SAW and ACT devices, spectral estimation, solid state device modeling and CAD techniques, communication networks, integrated services digital networks, neural networks, systems and controls, robotics, robust control, computer control, microelectronics semiconductors, thin films, power system stability, bipolar device modeling, solid state lasers, optical propagation, fiber optics, optical signal processing, laser induced damage, optical testing, diffractive optics, phase conjugation, infrared detectors, fourier optics, lens design, non-linear optics, and power electronics.

Degree Programs

The Department of Electrical Engineering offers the Master of Science in Electrical Engineering degree (M.S.E.E.), the Master of Science degree (M.S.), and the Doctor of Philosophy (Ph.D.).

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING - M.S.E.E.

The M.S.E.E. degree is intended for students with a baccalaureate degree in electrical engineering or related field from an approved institution. Admission requirements include a minimum grade point average of 3.0 (A=4.0) on the last 60 semester hours of the bachelor's degree and a minimum combined score of 1000 on the General test of the Graduate Record Examination. Students with a degree from an international institutional must score 550 or better on the Test of English as a Foreign Language.

Students with a grade point average of less than 3.0 may be admitted on a trial program basis in some circumstances. Specific information can be obtained from the department.

Students with a non-electrical engineering degree must have had the equivalent course work or satisfy the following articulation program:

Mathematics through Differential Equations (MAP 3302 or equivalent)

Physics with Calculus (PHY 3048, PHY 3049 or equivalent)

Electronics (EEL 3307 or equivalent)

Communications (EEL 3552 or equivalent)

EM Fields (EEL 3470 or equivalent)

Digital Systems (EEL 3342 or equivalent)

Additional courses may also be required to correct any undergraduate course deficiencies.

Thesis Option Degree Requirements

This option requires a minimum of thirty semester hours of approved course work. Program requirements include:

- At least 6 credits from one of the following specialization areas:

Controls Communication

Digital Signal Processing

EM Fields

Electronics

Electro-optics

Solid State and Microelectronics

- b. One course from any other 2 areas listed in Part a (6 hours total).
- c. No more than 6 credits of thesis will count toward the degree requirement.
- d. 9 credits in any area of interest, inside or outside the department, in an approved program of study.
- e. At least 15 credit hours must be from 6000 level courses.

Detailed information on the specializations is available in the department. Students must have an advisor appointed and an official program of study submitted before completing six semester hours of course work.

Non-Thesis Degree Requirements

This option requires a minimum of 36 semester hours of course work and is intended primarily for part-time students. Program requirements are the same as for the thesis option except that the thesis requirement is replaced by 12 hours of course work, and a final comprehensive examination is required.

MASTER OF SCIENCE - M.S.

This degree program is reserved for a specific specialization outside of the established sub-disciplines.

DOCTOR OF PHILOSOPHY - Ph.D.

The 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, controls, electro-optics, electromagnetics, electronics, and solid-state/microelectronics.

Admission

Students must satisfy university requirements and have completed a master's degree in electrical engineering or a closely related discipline, with a minimum grade point average of 3.5 of a possible 4.0, and a minimum of 1200 on the combined scores of the General test of the Graduate Record Examination.

Students are admitted initially on a pre-Ph.D. basis and required to pass a Qualifying examination. Then the student must form a dissertation committee and submit an approved program of study before being admitted to degree seeking status.

Degree Requirements

The Ph.D. degree requires a minimum of 84 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 a college of engineering. There is a residency requirement of two continuous semesters in full-time graduate student status (minimum of 9 semester hours) after acceptance to 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 admission to doctoral program.

Transfer Credits

A limited number of credit hours may be transferred from a master's degree toward these requirements, including a maximum of 6 hours of 4000-level courses; no 3000-level courses; and no courses with grades less than 'B'.

Examinations

In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

Industrial Engineering and Management Systems

J.E. Biegel, Ph.D.; P.E.	Professor
Y.A. Hosni, Ph.D.; P.E.	Professor
G.E. Schrader, Ph.D.; P.E.	Professor
W.W. Swart, Ph.D.; P.E.	Chair & Professor
G.E. Whitehouse, Ph.D.; P.E.	Dean & Professor
A.K. Elshennawy, Ph.D.; C.Q.E.	Associate Professor
C.H. Lee, Ph.D.	Associate Professor
J.A. Sepúlveda, Ph.D.; P.E.	Graduate Coordinator & Associate Professor
R. Armacost, D.Sc.	Assistant Professor
M. Mollaghasemi, Ph.D.	Assistant Professor
L.C. Morse, Ph.D.	Assistant Professor
M. Mullens, Ph.D.	Assistant Professor
E.L. Parkinson, Ph.D.	Assistant Professor
R.V. Rogers, Ph.D.	Assistant Professor
A. Fernández, M.S.E., M.B.S., P.E.	Assistant Chair & Instructor
A. Jackson, M.B.A.	Instructor
J. McIntosh, M.S.E.E., M.B.A.	Instructor
R.A. Kaufman, Ph.D.	Faculty Associate

The department's graduate programs have developed to support the emergence of the Central Florida area as one of the national centers of high technology as well as service industry. The original Master of Science in Engineering (M.S.E.) offerings included Industrial Engineering and Manufacturing Engineering. The original Master of Science (M.S.) offering included Computer Integrated Manufacturing, Engineering Management, and Operations Research. In 1984, the department began offering the nationally unique degree in Simulation Systems. This degree was specifically developed to support the Center of Excellence in Simulation and Training established in the Central Florida region. In 1989, the department received Board of Regents permission to offer Florida's first graduate degree in Product Assurance Engineering. This degree serves the increasing demand for individuals trained in the areas of productivity and quality. The department leads the College of Engineering in doctoral degrees awarded, including the college's first doctoral degree to a woman. Supporting this activity is a departmental sponsored research base of well over \$1.7 million, which is the highest of any industrial engineering department in Florida and fourth highest in the country on a per faculty member basis in 1990.



UCF at Daytona Beach

Credit: Tobey Johns, DBCC

The department's emergence as one of the America's leading research units began in 1987 with a multi-year grant from the Florida High Technology and Industry Council to a consortium formed between General Electric Company, Embry-Riddle Aeronautical University, and UCF's Industrial Engineering Department. This grant was to support the development of an Intelligent Simulation and Training System (ISTS) to train air traffic controllers. These efforts are producing new knowledge about generic Intelligent Simulation and Training Systems. The project has supported research by 9 faculty members, 11 Ph.D. students, and 11 M.S. students. As a result of this work, multiple proposals have been prepared and submitted, including a \$15 million proposal to the National Science Foundation's Engineering Education Coalition. In 1988, the department became one of the subcontractors to a multi-year research effort involving the University of Oregon and the Florida Solar Energy Center, sponsored by the U.S. Department of Energy. The purpose of this effort is 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 M.S. in Engineering Management to selected NASA engineers at the Kennedy Space Center. Currently the program has an enrollment of 120 NASA engineers.

In 1991, the Department became one of the major sub-contractors to a multi-year, multi-million dollar research project sponsored by the Federal Highway Administration to evaluate an on-board navigational system. The project involves Science Applications International Corporation, Texas Transportation Institute, Queens University, University of South Florida, and the Center for Advanced Research.

Degree Programs

The Department of Industrial Engineering and Management Systems offers Master of Science in Engineering degrees in Industrial Engineering (MSIE) and Manufacturing Engineering (MSME); Masters of Science (M.S.) degrees in Computer Integrated Manufacturing, Engineering Management, Operations Research, Product Assurance Engineering, and Simulation; and the Doctor of Philosophy (Ph.D.) degree.

Degree Requirements

The Master of Science in Engineering degrees require an undergraduate degree in Industrial Engineering or a closely related discipline. They are offered as a 30 semester hour program that includes a Thesis. The Master of Science options are available with thesis (30 semester hours) or without thesis (36 semester hours).

A program of study, satisfying the requirements of a departmental discipline, must be developed with a faculty advisor and meet with departmental approval. A student with an undergraduate degree outside the selected departmental discipline may be required to satisfy an articulation program. Substitutions for required courses must meet with the approval of the advisor and the department.

MASTER OF SCIENCE IN ENGINEERING - M.S.E.

Industrial Engineering (M.S.I.E.)

30 semester Hours

This degree requires a Bachelor of Science in Industrial Engineering as a prerequisite.

Required Courses

24 Semester Hours

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

Electives

6 Semester Hours

Manufacturing Engineering (M.S.Mfg.E)

This degree is designed for students who have an undergraduate degree in Industrial Engineering or an allied engineering discipline.

Prerequisites

Manufacturing Engineering (EIN 4391)
Engineering Economic Analysis (EGN 3613)
Probability and Statistics for Engineers (STA 3032)*
Operations Research (ESI 4312)*

*These requirements may be met by taking ESI 5316 and STA 5156 as part of the program of study.

Required Courses

24 Semester Hours

EIN	5415	Tool Engineering and Manufacturing Analysis	3 hours
EIN	6392C	Manufacturing Systems Engineering	3 hours
EIN	5XXX	Concurrent Engineering	3 hours
EIN	6605C	Robotics and Automated Systems	3 hours
EIN	6XXX	Advanced Manufacturing Processes	3 hours
ESI	6225	Quality Analysis and Control	3 hours
EIN	6971	Thesis (required)	6 hours

Electives

6 Semester Hours

MASTER OF SCIENCE - M.S.

Computer Integrated Manufacturing (M.S.) 30-36 Semester Hours

This option is designed for students who have an undergraduate degree in Engineering, Mathematics, Computer Science, or allied fields.

Prerequisites

Mathematics through Differential Equations (MAP 3302)
Probability and Statistics for Engineers (STA 3032)*
Manufacturing Engineering (EIN 4391)
Operations Research (ESI 4312)*

*These requirements may be met by taking ESI 5316 and STA 5156 as part of the program of study.

Required Courses

18-24 Semester Hours

EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6392C	Manufacturing Systems Engineering	3 hours
EIN	6605C	Robotics and Automated Systems	3 hours
EIN	6607C	Computer Numerical Control	3 hours
EIN	6330	Quality Control in Automation	3 hours
EIN	5xxx	Concurrent Engineering	3 hours
EIN	6971	Thesis (optional)	6 hours

Electives

6-18 Semester Hours

Engineering Management (M.S.) 30-36 Semester Hours

This program is designed for technically qualified individuals who plan to assume a management role in project or program-oriented environments in industry or government. It provides the skills to bridge the gap between a technical specialty and technical management.

Prerequisites

Mathematics through Differential Equations (MAP 3302)
High level computer language and microcomputer familiarity

Required Courses			24-30 Semester Hours
STA	5156	Probability and Statistics for Engineers	3 hours
EIN	5XXX	Cost Engineering	3 hours
EIN	5117	Management Information Systems	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
EIN	6140	Project Engineering	3 hours
EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6322	Engineering Management	3 hours
ESI	5316	Operations Research	3 hours
EIN	6971	Thesis (optional)	6 hours

Electives 0-12 Semester Hours

Operations Research (M.S.)

This option is designed for students who have an undergraduate degree in engineering, mathematics, or science.

Prerequisites

- Operations Research (ESI 4312)*
- Mathematics through Differential Equations (MAP 3302)
- Probability and Statistics for Engineers (STA 3032)*
- Higher level computer programming and microcomputer familiarity

*These requirements may be met by taking ESI 5316 and STA 5156 as part of the program of study.

Required Courses			15-21 Semester Hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6427	Linear Programming and Extension	3 hours
ESI	6358	Decision Analysis	3 hours
STA	5205	Experimental Design and Response Surface Methodology	3 hours
		or	
STA	6236	Regression Analysis	3 hours
STA	5825	Stochastic Processes and Applied Probability Theory	3 hours
EIN	6971	Thesis (optional)	6 hours

Electives 9-21 Semester Hours

Product Assurance Engineering (M.S.) 30-36 Semester Hours

This option is designed for students who have an undergraduate degree in engineering or a closely related discipline. The program is designed to provide the student with the necessary knowledge in Product Assurance Engineering to plan, implement, and supervise the product assurance function in government, military, or individual organizations.

Prerequisites

- Mathematics through Differential Equations (MAP 3302)
- Manufacturing Engineering (EIN 4391)
- Operations Research (SEI 4312)*
- Probability and Statistics for Engineers (STA 3032)*

*These requirements may be met by taking ESI 5316 and STA 5156 as part of the program of study.

Required Courses			24-30 Semester Hours
EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6140	Project Engineering	3 hours
EIN	6392C	Manufacturing Systems Engineering	3 hours
ESI	5236	Reliability Engineering	3 hours

ESI	6224	Quality Assurance Management	3 hours
ESI	6225	Quality Analysis and Control	3 hours
ESI	6227	Total Quality Management	3 hours
STA	5205	Experimental Design and Response Surface Methodology	3 hours
EIN	6971	Thesis (Optional)	6 hours

Electives

9-12 Semester Hours

Simulation Systems (M.S.)

30-36 Semester Hours

The Master of Science degree in Simulation Systems is designed to prepare individuals with undergraduate degrees in engineering, mathematics, or science for careers in the simulation field. There are two alternate tracks in this option. The Simulators and Training System Track and the Simulation Modeling and Analysis Track.

Prerequisites (both tracks)

Mathematics through Differential Equations (MAP 3302)

Probability and Statistics for Engineers (STA 3032)*

Computer Programming

*May be satisfied by taking STA 5156 as part of the program of study.

The Simulators and Training Systems Track

This track of the Masters in Simulation program responds to the needs of professionals in the training simulation (simulator) industries. Students in this track will have an opportunity for first-hand experience in the simulation field through UCF's Institute of Simulation and Training.

Required Courses

24-30 Semester Hours

EIN	6140	Project Engineering	3 hours
EIN	6317	Training Systems Engineering	3 hours
EME	6613	Instructional Systems Design	3 hours
EIN	5381	Engineering Logistics	3 hours
EIN	6645	Modeling and Simulation of Real-time Processes	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
EIN	5255	Training Simulator Engineering	3 hours
EIN	5602	Expert System in Industrial Engineering	3 hours
EIN	6971	Thesis (Optional)	6 hours

Electives

0-12 Semester Hours

The Simulation Modeling and Analysis Track

This alternate track of the Masters in Simulation program caters to students desiring to gain expertise in simulation as an analysis and design tool for the manufacturing and service industries.

Required Courses

21-27 Semester Hours

EIN	5602	Expert Systems	
EIN	6140	Project Engineering	3 hours
EIN	6647	Intelligent Simulation	3 hours
ESI	5361	Operations Research	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6532	Object Oriented Simulation	3 hours
STA	5205	Experimental Design and Response Surface Methodology	3 hours
EIN	6971	Thesis (optional)	6 hours

Electives

3-15 Semester Hours

DOCTOR OF PHILOSOPHY DEGREE - Ph.D. 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 research, industrial engineering, manufacturing, engineering management, operations research, or simulation and training.

Admission

Students must satisfy regular university admissions criteria: Minimum TOEFL score of 550 (applicants whose native language is not English only); minimum GPA 3.0 in last 60 semester hours of undergraduate studies or minimum GRE score of 1000 combined verbal-quantitative portion. In addition, the student must have a masters degree in industrial engineering or a closely related discipline from a recognized institution. Before admission to the doctoral program, students must complete any needed articulation course work and pass a Ph.D. Qualifying Examination. This examination is normally taken within the first year after all articulation work is completed.

Degree Requirements

The Ph.D. degree requires a minimum of 84 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 a college of engineering. There is a residency requirement of two continuous semesters in full-time graduate student status (minimum of 9 semester hours) after acceptance to 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 admission to doctoral program.

Transfer Credits

A maximum of 36 semester hours, including up to 6 thesis hours, may be transferred from a master's degree toward these requirements. Limitations: a maximum of 6 hours of 4000-level courses; no 3000-level courses; and no courses with grades less than "B". Any number of additional semester hours of post-masters work may be transferred.

Examinations

In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

Prerequisites

Students must have background (or articulation course work passed with a grade of B or better) in the following areas:

- A high level structured programming language
- Probability and Statistics (STA 3032)
- Work Measurement (EIN 3314)
- Industrial Facilities Planning (EIN 4364)
- Manufacturing Engineering (EIN 4391)

Required Courses

33 Semester Hours

The following areas must form part of the Student's program of study. Substitute courses may be approved by the department's Ph.D. Committee.

STA	5205	Experimental Design and Response Surface Methodology	3 hours
STA	6236	Regression Analysis	3 hours

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

Electives

24 Semester Hours

Dissertation

24 Semester Hours

ITEMS GRADUATE COURSES BY AREA OF STUDY

Engineering Management

EIN	5117	Management Information Systems	3 hours
EIN	5381	Engineering Logistics	3 hours
EIN	5XXX	Cost Engineering	3 hours
EIN	6140	Project Engineering	3 hours
EIN	6322	Engineering Management	3 hours
EIN	6339	Productivity Engineering	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
EIN	6933	Systems Acquisition	3 hours
ESI	5451	Network-based Project Planning Scheduling and Control	3 hours

Ergonomics

EIN	5248	Ergonomics	3 hours
EIN	6215	Systems Safety Engineering and Management	3 hours
EIN	6249	Biomechanics	3 hours
EIN	6258	Ergonomics in High Tech Environments	3 hours
EIN	6264	Environment Hygiene and Occupational Health	3 hours
EIN	6270	Work Physiology	3 hours

Expert Systems

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

Manufacturing/Operations Management

EIN	5388	Forecasting	3 hours
EIN	5415	Tool Eng. and Manufacturing Analysis	3 hours
EIN	6425	Scheduling and Sequencing	3 hours
EIN	5XXX	Materials Handling	3 hours
EIN	5XXX	Concurrent Engineering	3 hours
EIN	6336	Production and Inventory Control	3 hours
EIN	6392	Manufacturing Systems Engineering	3 hours
EIN	6417	Precision Engineering	3 hours
EIN	6418	Electronics Manufacturing	3 hours
EIN	6605	Robotics and Automated Systems	3 hours
EIN	6607	Computer Numerical Control	3 hours
EIN	6608	Surface Design and Manufacture	3 hours
EIN	6XXX	Advanced Manufacturing Processes	3 hours

Operations Research

ESI	5316	Operations Research	3 hours
ESI	6336	Queuing Systems	3 hours
ESI	6427	Linear Programming and Extension	3 hours
ESI	6437	Nonlinear Programming and Dynamic Programming	3 hours
ESI	6358	Decision Analysis	3 hours
ESI	6XXX	Network Analysis and Integer Programming	3 hours

Simulation and Training

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

Statistics and Quality Control

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

Mechanical and Aerospace Engineering

<i>P.J. Bishop, Ph.D.; P.E.</i>	Professor
<i>B.E. Eno, Ph.D.; P.E.</i>	Graduate Coordinator & Professor
<i>F.S. Gunnerson, Ph.D.; P.E.</i>	Director of Graduate Affairs & Professor
<i>E.R. Hosler, Ph.D.; P.E.</i>	Associate Chair & Professor
<i>F.A. Moslehy, Ph.D.; P.E.</i>	Professor
<i>D.W. Nicholson, Ph.D.</i>	Chair & Professor
<i>S.L. Rice, Ph.D.; P.E.</i>	Associate Dean & Professor
<i>W.F. Smith, Sc.D.; P.E.</i>	Professor
<i>L.A. Anderson, Ph.D.; P.E.</i>	Associate Professor
<i>J.K. Beck, P.E.</i>	Director of Undergraduate Affairs & Associate Professor
<i>V.H. Desai, Ph.D.; P.E.</i>	Associate Professor
<i>A.L. Grogan, Ph.D.</i>	Associate Professor
<i>A.H. Hagedoorn, Ph.D.; P.E.</i>	Associate Professor
<i>C.E. Nuckolls, Ph.D.; P.E.</i>	Associate Professor
<i>G.G. Ventre, Ph.D.; P.E.</i>	Associate Professor
<i>R.M. Byers, Ph.D.</i>	Assistant Professor
<i>L. Chew, Ph.D.</i>	Assistant Professor
<i>A.J. Kassab, Ph.D.</i>	Assistant Professor
<i>K.C. Lin, Ph.D.</i>	Assistant Professor
<i>A. Minardi, Ph.D.</i>	Assistant Professor
<i>J. Nayfeh, Ph.D.</i>	Assistant Professor

Fields of Emphasis and Research

Major fields of emphasis in the Mechanical and Aerospace Engineering Department include aerospace systems (experimental and computational aerodynamics, flight dynamics and simulation, optimal and adaptive control of space vehicles, aerospace design), materials science and engineering (thin films, surface science, corrosion, photonic materials, chemomechanical aspects of wear), mechanical systems (experimental mechanics, finite and boundary elements, tribology, fracture, nonlinear dynamics, nondestructive evaluation), and thermo-fluids (laser machining, turbomachinery, two-phase flow, computational thermo-fluids, HVAC, energy conservation). Current research projects in aerospace systems include design of an assured recovery vehicle, application of laser doppler anemometry to supersonic flow, and design of a heavy gas wind tunnel. Current research projects in materials science and engineering include methods for characterizing chemomechanical effects of wear, methods of measuring stress corrosion cracking, and methods of analyzing thin film coatings. Current research projects in mechanical systems include laser-based techniques for measurement of surface roughness and displacement fields in tribosystems, finite

element simulation of dynamic crack tip stress fields and of penetration by composite projectiles, and nondestructive testing. Current research projects in thermo-fluids include computer-aided laser machining, heat pipes, phase change materials for energy storage, and subsonic and supersonic flow visualization.

Degree Programs

The Mechanical and Aerospace Engineering Department offers the Master of Science in Mechanical Engineering (MSME) and the Doctor of Philosophy (Ph.D.) degrees.

MASTER OF SCIENCE IN MECHANICAL ENGINEERING - MSME

Admission

The MSME degree 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 two years of undergraduate study, a combined score of 1000 on the quantitative and verbal portions of the Graduate Record Examination (GRE), and, for students whose native language is not English, a score of 550 on the Test of English as a Foreign Language (TOEFL). A post-baccalaureate trial program of 9 semester hours may be allowed for students with a grade point average of less than 3.0 but greater than 2.8.

Degree Requirements

The MSME degree is offered as a thesis or a non-thesis program in each of the four departmental disciplines of Aerospace Systems, Materials Science and Engineering, Mechanical Systems, and Thermo-Fluids. The thesis program requires 30 semester hours, at least half of which must be at the 6000 level and will include 6 hours of thesis credit. The non-thesis program requires 36 semester hours of course work, at least 15 of which must be at the 6000 level. A program of study, satisfying the requirements of a departmental discipline, must be developed with an advisor at the beginning of the MSME study and meet with departmental approval. A student with an undergraduate degree outside of the selected departmental discipline may be required to satisfy an articulation program. Substitutions for required courses must meet with the approval of the advisor and the department.

Aerospace Systems

30-36 Semester Hours

Prerequisites

- Mathematics through Differential Equations (MAP 3302)
- Programming and Numerical Methods (EGN 3420)
- High Speed Aerodynamics (EAS 4134)
- Flight Mechanics (EAS 4105)
- Flight Structures (EAS 4200)
- Aerothermodynamics of Propulsion Systems (EAS 4300)

Required Courses

12 Semester Hours

EAS	6123	Advanced Aerodynamics	3 hours
EAS	6405	Advanced Flight Dynamics	3 hours
EML	5533	Mathematical Methods in Mechanical and Aerospace Engineering	3 hours
EML	6067	Finite Elements in Mechanical and Aerospace Engineering I	3 hours
		or	
EML	6725	Computational Fluid Dynamics and Heat Transfer I	3 hours

Representative Electives

18-24 Semester Hours

EAS	5302	Direct Energy Conversion	3 hours
EAS	6138	Advanced Gas Dynamics	3 hours
EAS	6507	Fundamentals of Astrodynamics	3 hours
EAS	6517	Optimal Spacecraft Attitude and Orbital Maneuvers	3 hours
EML	5152	Intermediate Heat Transfer	3 hours

EML	5224	Acoustics	3 hours
EML	5237	Intermediate Mechanics of Materials	3 hours
EML	5402	Turbomachinery	3 hours
EML	5532	Computer-Aided Design for Manufacture	3 hours
EML	5713	Intermediate Fluid Mechanics	3 hours
EML	6062	Boundary Elements in Engineering	3 hours
EML	6067	Finite Elements in Mechanical and Aerospace Engineering I	3 hours
EML	6068	Finite Elements in Mechanical and Aerospace Engineering II	3 hours
EML	6124	Two Phase Flow	3 hours
EML	6223	Advanced Vibrational Systems	3 hours
EML	6305	Experimental Mechanics	3 hours
EML	6311	System Control	3 hours
EML	6547	Engineering Fracture Mechanics in Design	3 hours
EML	6712	Mechanics of Viscous Flow	3 hours
EML	6725	Computational Fluid Dynamics and Heat Transfer I	3 hours
EML	6726	Computational Fluid Dynamics and Heat Transfer II	3 hours
EAS	6971	Thesis	6 hours

Materials Science and Engineering

30-36 Semester Hours

Prerequisites

Mathematics through Differential Equations (MAP 3302)
Programming and Numerical Methods (EGN 3420)
Structure and Properties of Materials (EGN 3365C)
Mechanics of Materials (EGN 3331) or Thermodynamics (EGN 3343)

Required Courses

12 Semester Hours

EMA	5108	Surface Science	3 hours
EMA	5126	Physical Metallurgy	3 hours
EMA	5326	Corrosion and Electrochemical Engineering	3 hours
EMA	5106	Metallurgical Thermodynamics	3 hours
		or	
EML	5237	Intermediate Mechanics of Materials	3 hours

Representative Electives

18-24 Semester Hours

EMA	5140	Introduction to Ceramic Materials	3 hours
EMA	5163	Polymer Sciences and Engineering	3 hours
EMA	5304	Scanning Electron Microscopy	3 hours
EMA	5626	Mechanical Metallurgy	3 hours
EMA	6136	Diffusion in Solids	3 hours
EMA	6504	Modern Characterization Techniques for Materials	3 hours
EMA	6628	Materials Failure Analysis	3 hours
EML	5245	Tribology	3 hours
EML	5546	Engineering Design with Composite Materials	3 hours
EML	5584	Biomechanics and Biomaterials	3 hours
EML	6211	Continuum Mechanics	3 hours
EML	6305	Experimental Mechanics	3 hours
EML	6531	Mechanical Behavior of Materials	3 hours
EML	6547	Engineering Fracture Mechanics in Design	3 hours
EML	6653	Theory of Elasticity	3 hours
EEL	5355C	Fabrication of Solid State Devices	3 hours
EEL	5450	Thin Film Optics	3 hours
PHY	5431	Optical Properties of Materials	3 hours
PHY	5937	Introduction to Crystal Growth	3 hours
CHM	5711	The Chemistry of Materials	3 hours
EMA	6971	Thesis	6 hours

Mechanical Systems**30-36 Semester Hours****Prerequisites**

Mathematics through Differential Equations (MAP 3302)
 Programming and Numerical Methods (EGN 3420)
 Kinematics (EML 3262)
 Machine Design (EML 3500)
 Vibration Analysis (EML 4220)
 Measurements (EML 4304)
 Feedback Controls (EML 4312)

Required Courses**12 Semester Hours**

EML 5237	Intermediate Mechanics of Materials	3 hours
EML 6271	Dynamics	3 hours
EML 5533	Mathematical Methods in Mechanical and Aerospace Engineering	3 hours
EML 6062	Boundary Elements in Engineering or	3 hours
EML 6067	Finite Elements in Mechanical and Aerospace Engineering I	

Representative Electives**18-24 Semester Hours**

EML 5224	Acoustics	3 hours
EML 5228	Modal Analysis	3 hours
EML 5245	Tribology	3 hours
EML 5532	Computer-Aided Design for Manufacture	3 hours
EML 5546	Engineering Design with Composite Materials	3 hours
EML 5572	Probabilistic Methods in Design	3 hours
EML 5584	Biomechanics and Biomaterials	3 hours
EML 6062	Boundary Elements in Engineering	3 hours
EML 6067	Finite Elements in Mechanical and Aerospace Engineering I	3 hours
EML 6068	Finite Elements in Mechanical and Aerospace Engineering II	3 hours
EML 6211	Continuum Mechanics	3 hours
EML 6223	Advanced Vibrational Systems	3 hours
EML 6226	Analytical Dynamics	3 hours
EML 6227	Nonlinear Vibrations	3 hours
EML 6279	Synthesis of Mechanisms	3 hours
EML 6305	Experimental Mechanics	3 hours
EML 6311	System Control	3 hours
EML 6531	Mechanical Behavior of Materials	3 hours
EML 6547	Engineering Fracture Mechanics in Design	3 hours
EML 6653	Theory of Elasticity	3 hours
EML 6971	Thesis	6 hours

Thermo-Fluids**30-36 Semester Hours****Prerequisites**

Mathematics through Differential Equations (MAP 3302)
 Programming and Numerical Methods (EGN 3420)
 Physics (PHY 3048)
 Thermodynamics (EML 3101)
 Fluid Mechanics (EML 4703)
 Heat Transfer (EML 4142)

Required Courses**12 Semester Hours**

EML 5713	Intermediate Fluid Mechanics	3 hours
EML 5152	Intermediate Heat Transfer	3 hours

EML	5533	Mathematical Methods in Mechanical and Aerospace Engineering	3 hours
EML	6725	Computational Fluid Dynamics and Heat Transfer I	3 hours

Representative Electives

18-24 Semester Hours

EAS	5302	Direct Energy Conversion	3 hours
EAS	6138	Advanced Gas Dynamics	3 hours
EML	5402	Turbomachinery	3 hours
EML	5532	Computer-Aided Design for Manufacture	3 hours
EML	6026	Boundary Elements in Engineering	3 hours
EML	6104	Classical Thermodynamics	3 hours
EML	6105	Statistical Thermodynamics	3 hours
EML	6124	Two Phase Flow	3 hours
EML	6134	Combustion Phenomena	3 hours
EML	6154	Conduction Heat Transfer	3 hours
EML	6155	Convection Heat Transfer	3 hours
EML	6157	Radiation Heat Transfer	3 hours
EML	6158	Gaseous Radiation Heat Transfer	3 hours
EML	6712	Mechanics of Viscous Flow	3 hours
EML	6726	Computational Fluid Dynamics and Heat Transfer II	3 hours
EML	6971	Thesis	6 hours

DOCTOR OF PHILOSOPHY - Ph.D.

The Ph.D. degree is primarily intended for a student with a master's degree in mechanical or aerospace engineering or a closely related discipline. The program is intended to allow a student to study in depth, with emphasis on research, in aerospace systems, materials science and engineering, mechanical systems, or thermo-fluids.

Admission

In addition to satisfying regular University admission criteria, the student must have a master's degree in mechanical or aerospace engineering or a closely related discipline from a recognized institution. In addition, the student must 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. This examination is normally taken within the first year of study beyond the master's degree.

Degree Requirements

The Ph.D. degree requires a minimum of 84 semester hours beyond the bachelor's degree, 27 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, including 6 thesis hours, may be transferred from a masters degree toward these requirements. Post-masters credit up to 18 semester hours may be considered for transfer. 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 discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

College of Engineering Courses

CCE 5005 Construction Engineering II

3 cr (3,0)

PR: CCE 4004 or C.I. Construction planning, equipment, and methods used in heavy construction.

- CCE 5035 Construction Law & Project Management** 3 cr (3,0)
PR: C.I. Contracts, specifications, and law for engineers. Strategic planning, management, development, design, and production of construction projects. Value engineering, project funding and cash flow.
- CCE 6505 Construction Building System Techniques** 3 cr (3,0)
PR: CES 4127 or C.I. Wood engineering techniques and architectural principles in construction. Construction design of mechanical and electrical systems.
- CCE 6506 Construction Network Techniques** 3 cr (3,0)
PR: EGN 4634 or C.I. Critical path planning and scheduling. Networking techniques. Resource leveling; time cost trade-offs using precedence networks and network cost analysis.
- CEG 5015 Geotechnical Engineering II** 3 cr (3,0)
PR: ECI 4305. Continuation of ECI 4305 with emphasis on shear strength and design factors for earth pressures bearing capacity, and slope stability.
- CEG 6065 Soil Dynamics** 3 cr (3,0)
PR: CEG 4101. Comprehensive coverage in calculating the dynamic response of foundations, presenting a variety of contemporary techniques for fields and laboratory.
- CEG 6115 Foundation Engineering** 3 cr (3,0)
PR: CEG 5015. Analysis and design of spread footings, mat foundations, retaining walls, sheeting and bracing systems and pile foundations.
- CEG 6317 Theoretical Geotechnical Engineering** 3 cr (3,0)
PR: CEG 4305. Foundations of theoretical soil mechanics. Concepts of stress, strain, elasticity body, settlement. Stability and limiting equilibrium.
- CEG 6415 Seepage Analysis** 3 cr (3,0)
PR: CEG 4101C. Seepage and groundwater flow analysis: levees, earth dams, retention ponds, etc. Appropriate computer programs and engineering applications.
- CES 5143 Matrix Structural Analysis** 3 cr (3,0)
PR: CES 4102 or equivalent. Optimization and matrix methods applied to the design of real structures.
- CES 6116 Finite Elements in Structures** 3 cr (3,0)
PR: C.I. Applications of the finite element method to the analysis and design of linear and non-linear structural components and systems.
- CES 6129 Analysis of Plates and Shells** 3 cr (3,0)
PR: EML 5237 or equivalent. Theory of bending of thin plates. Energy and approximation techniques. Non-linear behavior of plates. Theory of thin shells with small deformations.
- CES 6144 Matrix Methods of Structural Analysis** 3 cr (3,0)
PR: CES 5141 or C.I. Structural analysis of beams, frames, and plates using matrix methods and current computer programs.
- CES 6209 Dynamics of Structures** 3 cr (3,0)
PR: C.I. Dynamic behavior of linear structures. Natural vibrations of structural systems. Damping in structures. Response to periodic and non-periodic excitations. Emphasis on matrix methods.
- CES 6218 Structural Stability** 3 cr (3,0)
PR: EML 5237 or equivalent. Analysis of structural elements, columns, frameworks, lateral stability. Introduction to the stability of plates. Energy and approximate methods.
- CES 6606 Steel Design** 3 cr (3,0)
PR: CES 4605 or equivalent. Design of complete steel structures to include economics, plastic design, and real building examples.
- CES 6706 Concrete Design** 3 cr (3,0)
PR: CES 4702 or equivalent. Design of concrete structures to include economics, slabs, prestressed concrete, and real building examples.
- CGN 5320 Geographic Information Systems** 3 cr (2,2)
Programming theory and application of Geographic Information systems to Civil Engineering projects.

- CGN 5504 Civil Engineering Materials** 3 cr (2,2)
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 5506 Asphalt Concrete Mix Design** 3 cr (2,2)
PR: CEG 4101 Geotech I Properties of asphalt, aggregate and asphalt mixtures, Marshall mix design, Hveem mix design, pavement rehabilitation.
- CGN 6425 Mathematical Modeling in Civil Engineering** 3 cr (3,0)
PR: C.I. Development of modeling techniques applied to the analysis of contemporary Civil Engineering problems including transportation, fluid flow, and two-dimensional continuum analysis.
- CGN 6606 Public Works Engineering** 3 cr (3,0)
PR: C.I. Principles and practices, operation and maintenance, equipment, utilities, planning and design, etc.
- CGN 6655 Regional Planning, Design, and Development** 3 cr (3,0)
PR: ENV 4651. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.
- CWR 5205 Hydraulic Engineering** 3 cr (2,3)
PR: CWR 4201. Environmental and civil engineering hydraulics application. Pipe and open channel flow, fittings, flow measurements, etc.
- CWR 5545 Water Resources Engineering** 3 cr (3,0)
PR: CWR 4101, CWR 4201. Systems identification and solution to complex water allocation problems, and other hydraulic engineering designs and operations using economic analysis and operations research techniques.
- CWR 6125 Groundwater Hydrology** 3 cr (3,0)
PR: CWR 4201 or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.
- CWR 6235 Open Channel Hydraulics** 3 cr (3,0)
PR: CWR 4201 or C.I. Free surface flow studies by empirical and theoretical methods for the design, operation, and management of open channels.
- EAS 5302 Direct Energy Conversion** 3 cr (3,0)
PR: EML 3101 and PHY 3101. Direct methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics and magnetohydrodynamics. Analysis and systems design.
- EAS 6123 Advanced Aerodynamics** 3 cr (3,0)
PR: EAS 4105. CR: EML 5533. Advanced topics in aerodynamic characteristics of airfoils, finite wings, waves, wing-body combinations, viscous flow and flow instabilities. Airfoil design.
- EAS 6138 Advanced Gas Dynamics** 3 cr (3,0)
PR: EML 5713, EML 5533. Analysis of steady and unsteady transonic, supersonic and hypersonic flows. Shock waves, nozzles, diffusers, and high speed wind tunnels.
- EAS 6405 Advanced Flight Dynamics** 3 cr (3,0)
PR: EAS 4101 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 Fundamentals of Astrodynamics** 3 cr (3,0)
PR: EAS 4502 or C.I. CR: EML 5533. Solution of the two body problem. Ballistic trajectories, orbital maneuvers, lunar and planetary trajectories.
- EAS 6517 Optimal Spacecraft Attitude and Orbital Maneuvers** 3 cr (3,0)
PR: EML 4312 or C.I. CR: EML 5533. Calculus of variations and necessary conditions for optimality. Solution of the two-point-boundary-value-problem. Numerical methods. Optimal feedback control.
- ECM 5135 Engineering Math Analysis I** 3 cr (3,0)
PR: MAP 3302. Topics in advanced engineering mathematics including systems of differential equations, phase plane, linear algebra, and vector differential calculus.
- ECM 5365 Introduction to Digital Systems** 3 or 3 cr (3,0)
PR: EEL 3342C or equivalent. Analysis and synthesis of combinational, synchronous and asynchronous sequential logic circuits. Introduction to controller design using a digital design language.

- ECM 5431 Expert Systems and Knowledge Engineering** 3 cr (3,0)
PR: ECM 4451 or C.I. Introduction to expert systems in engineering. Expert systems tools and interviewing techniques. This course is hands-on and project-oriented.
- ECM 5441 Image Processing** 3 cr (3,0)
PR: MAP 3302, EGN 3420. Two dimensional signal processing techniques; pictorial image representation; spatial filtering; image enhancement and encoding; segmentation and feature extraction; introduction to image understanding techniques.
- ECM 5453 Pattern Recognition** 3 cr (3,0)
PR: MAP 3302, EGN 3420. Theoretic and syntactic methods of pattern analysis. Decision functions; optimum decision criteria; training algorithms; feature extraction; unsupervised learning; data reduction and potential functions.
- ECM 5505C Microcomputer-based Monitoring and Control Systems** 3 cr (2,3)
PR: EEL 3342; ECM 4508 or C.I. Machine language programming; software development aids; systems design; interfacing considerations.
- ECM 5506C Engineering Applications of Computer Graphics** 3 cr (2,3)
PR: EGN 3420 or C.I. Computer Graphics in Engineering Applications. Laboratory program assignments.
- ECM 5806 Software Engineering I** 3 cr (3,0)
PR: EGN 3420, ECM 4230 or C.I. Design, implementation, and testing of computer software for Engineering applications.
- ECM 6235 Engineering Math Analysis II** 3 cr (3,0)
PR: ECM 5135. Advanced engineering math topics including Fourier series, partial differential equations, and complex variables.
- ECM 6306 Computer Network Design** 3 cr (3,0)
PR: ECM 4509 or C.I. Network types and network protocols. Design of networks and analysis of their performance.
- ECM 6308 Current Topics in Parallel Processing** 3 cr (3,0)
PR: ECM 6765 or C.I. Research topics in parallel architectures, including, but not limited to, systolic architectures, wavefront arrays, interconnection networks, reconfigurable architectures and fast algorithms.
- ECM 6426 Continuous System Simulation I** 3 cr (3,0)
PR: ECM 4708 or C.I. Use of state-space techniques, numerical integration, and CSSL programs. Laboratory assignments.
- ECM 6427 Continuous System Simulation II** 3 cr (3,0)
PR: ECM 6426. Continuation of ECM 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.
- ECM 6428 Current Issues in Real-Time Simulation** 3 cr (3,0)
PR: ECM 5506, ECM 6426. Design considerations in real-time, computer based, training simulator systems. Laboratory assignments.
- ECM 6432 Engineering of Artificial Intelligence Systems** 3 cr (3,0)
PR: ECM 5431 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.
- ECM 6433 Current Topics in Artificial Intelligence in Engineering Systems** 3 cr (3,0)
PR: ECM 6432 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.
- ECM 6434 Modeling and Artificial Intelligence** 3 cr (3,0)
PR: ECM 6432 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.
- ECM 6436 Automata Theory** 3 cr (3,0)
PR: COT 3100 or C.I. Structural theory and performance characteristics of the finite-state machines.

- ECM 6455 Machine Perception** 3 cr (3,0)
PR: ECM 5441 or ECM 5453 or C.I. Advanced methods of machine understanding; simulation of intelligent machine systems; automatic recognition systems; visual tracking systems; multispectral feature analysis.
- ECM 6457 Machine Intelligence** 3 cr (3,0)
PR: ECM 6455. Design and development of intelligent machine systems; decision theory; intelligence modeling; neural models; advanced techniques in applied artificial intelligence.
- ECM 6459 Introduction to Neural Networks** 3 cr (3,0)
PR: ECM 5453 or C.I. Artificial neural network theory, models and architectures. Neurobiological basis, learning theory, applications, and hardware implementation issues.
- ECM 6706 Engineering Data Reduction** 3 cr (3,0)
Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.
- ECM 6717 Digital Computer Systems** 3 cr (3,0)
PR: ECM 6765 or C.I. Analysis of special purpose computer elements, computers and computer systems. Microprocessor based systems, systems with one or more central or I/O processors, networks of computers.
- ECM 6765 Computer Systems Design** 3 cr (3,0)
PR: ECM 5365 or C.I. Study of digital systems and computer architecture using digital design language. Specification and design of computer systems. Comparison of software and hardware solutions.
- ECM 6805C Microcomputer Applications Design** 3 cr (2,3)
PR: ECM 5505C or C.I. Advanced applications of microcomputer systems. Design of systems and software to implement a case study in microcomputer usage.
- ECM 6807 Software Engineering II** 3 cr (3,0)
PR: ECM 5806 or equivalent; C.I. Continuation of ECM 5806. Emphasis on term projects and case studies.
- ECM 6811 Software Engineering Quality Assurance Methods** 3 cr (3,0)
PR: ECM 5806, ECM 6807. Methods for verification and validation of software quality, including software engineering metrics and models.
- ECM 6813 Software Development for Real-Time Engineering Systems** 3 cr (3,0)
PR: ECM 5806, ECM 6807. Issues associated with developing software for real-time systems, including parallel processing, task synchronization, and task scheduling.
- ECM 6815 Software Engineering Life-Cycle Control** 3 cr (3,0)
PR: ECM 5806, ECM 6807. Issues in software development life-cycle control including project cost and time estimation, methods and models, manpower allocation, and system configuration management.
- EEL 5173 Signal and System Analysis** 3 cr (3,0)
PR: EEL 3122. Continuous and discrete dynamic models; emphasis on state variable models. Laplace, Z-transform and time domain solutions of dynamic model behavior. Real-time digital simulation. Sampling theory.
- EEL 5255 Power Systems Analysis and Electric Machinery** 3 cr (3,0)
PR: EEL 4216 or C.I. System modeling, machinery, protection, load flow, stability.
- EEL 5332C Thin Film Technology** 3 cr (2,1)
PR: EEL 3306 or equivalent. To present the various thin film deposition techniques for the fabrication of microelectronic, semiconductor and optical devices.
- EEL 5353 Semiconductor Device Modeling and Simulation** 3 cr (3,0)
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 Fabrication of Solid-State Devices** 4 cr (3,3)
PR: EEL 4308. Fabrication of microelectronic devices, processing technology, ion implantation and diffusion, device design, and layout. Laboratory includes device processing technology.
- EEL 5357 CMOS Analog and Digital IC Design (CMOS Analog IC Design)** 3 cr (3,0)
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 Operational Amplifiers** 3 cr (3,0)
PR: EEL 4309C. Ideal and non-ideal Op-Amps. Linear applications: Active RC and switched-capacitor filters. Non-linear and other functional circuits. Frequency stability and compensation of Op-Amps.
- EEL 5434 Circuits and Devices** 3 cr (3,0)
PR: EEL 4436 or EEL 5555. Planar transmission lines; passive microwave circuits; active circuit design using Gunn, IMPATT, FETS, RTDS, etc.; microwave integrated circuits.
- EEL 5441 Introduction to Wave Optics** 3 cr (3,0)
PR: EEL 4440, or PHY 4424 or C.I. Electromagnetic foundation of light waves as applied to reflection, refraction, diffraction, interference, polarization, coherence, and guided waves.
- EEL 5446 Optical Systems Design** 3 cr (3,0)
PR: C.I. Design principles of lens and mirror optical systems; evaluation of designs using computer techniques.
- EEL 5450C Thin Film Optics** 3 cr (2,10)
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 Electro-Optics Laboratory** 3 cr (1,4)
PR: EEL 3470 or C.I. Study of laboratory techniques for optical measurements and performance of measurements on electro-optic devices to determine operational characteristics.
- EEL 5462C Antenna Analysis and Design** 3 cr (3,1)
PR: EEL 3470 or equivalent. Fundamentals of antennas; dipoles, loops, arrays, apertures, and horns. Analysis and design of various antennas.
- EEL 5513 Digital Signal Processing Applications** 3 cr (3,0)
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 Surface Acoustic Wave Devices and Systems** 3 cr (3,0)
PR: EEL 3552C. Course discusses SAW technology which includes the physical phenomenon, transducer design and synthesis, filter design and performance parameters. Actual devices and communication systems are presented.
- EEL 5542 Random Processes I** 3 cr (3,0)
PR: EEL 3552C and STA 3032. Elements of probability theory; random variables, and stochastic processes.
- EEL 5555 RF Communications** 3 cr (2,1)
PR: EEL 3552C. RF communication systems, 10 MHz to 1500 MHz. Scattering parameters, noise, receiver design, system implementation, spread spectrum. RF network and spectrum analyzers.
- EEL 5563 Fiber Optics Communication** 3 cr (3,0)
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 Digital Control Systems** 3 cr (3,0)
PR: EEL 3342C and EEL 4567. Real time digital control systems analysis and design. Z-transforms, sampling and reconstruction, time and frequency response, stability analysis, digital controller design.
- EEL 6141 Synthesis of Electric Filters** 3 cr (3,0)
Analysis and design of electric filters.
- EEL 6338 Advanced Topics in Microelectronics** 3 cr (3,0)
PR: C.I. The course covers advanced topics in microelectronics such as semiconductor device physics, semiconductor device fabrication, and semiconductor device modeling.
- EEL 6354 Semiconductor Devices II** 3 cr (3,0)
PR: EEL 5355C or C.I. Advanced course in the theory and design of semiconductor devices. Topics include injection, recombination, p-n junctions, FETs, and bipolar devices. Theory and models are developed.

- EEL 6357 CMOS Analog IC Design** 3 cr (3,0)
PR: EEL 3306 and EEL 4709. The objective of this course is to present the principles and techniques of the design of analog circuits that are to be implemented in a CMOS technology.
- EEL 6371 Advanced Electronics I** 3 cr (3,0)
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 Advanced Electronics II** 3 cr (3,0)
PR: EEL 5357 or EEL 6371. Advanced topics of current interest in VLSI design.
- EEL 6443 Electro-optics** 3 cr (3,0)
PR: EEL 3470, EEL 5441. Principles, design and use of birefringent and periodic electro-optic devices. Nonlinear and phase-conjugate optics.
- EEL 6457 Advanced Topics in Electro-Optics** 3 cr (3,0)
PR: C.I. Current research topics in electro-optics, such as optical computing, binary optics, advanced system design issues, novel laser systems, etc.
- EEL 6463 Antenna Analysis and Design II** 3 cr (3,0)
PR: EEL 5462C. Moment method, GTD, aperture antennas, reflectors, frequency independent antennas and microstrip antennas.
- EEL 6488 Electromagnetic Fields** 3 cr (3,0)
PR: EEL 3470 or C.I. Maxwell's equations. Boundary conditions. Propagation, reflection, and refraction of waves. Guided waves, Radiation.
- EEL 6492 Advanced Topics in Electromagnetics and Microwaves** 3 cr (3,0)
PR: C.I. Advanced and current topics in EM fields, antennas, and microwaves.
- EEL 6502 Adaptive Digital Signal Processing** 3 cr (3,0)
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 Communications Systems Design** 3 cr (3,0)
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 Multi-dimensional Digital Processing** 3 cr (3,0)
PR: EEL 5513 or C.I. Multi-dimensional signals and systems. Two-dimensional transforms and filters. Image processing applications.
- EEL 6530 Communication Theory** 3 cr (3,0)
PR: EEL 5542 or C.I. Communication in the presence of noise; analog and pulse modulation; use of phase-locked loops, synthesizers, VCOs, system implementations.
- EEL 6537 Detection and Estimation** 3 cr (3,0)
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 Random Processes II** 3 cr (3,0)
PR: EEL 5542. Stochastic processes. Mean-squared estimation. Queueing theory. Spectral estimation. Applications to communications and radar systems.
- EEL 6558 Advanced Topics in Digital Signal Processing** 3 cr (3,0)
PR: C.I. Advanced and current topics in digital signal processing, such as neural network, spectral analysis, speech processing.
- EEL 6560 Laser Engineering** 3 cr (3,0)
PR: EEL 5441 or C.I. Principles of laser amplification and oscillations; design of lasers; general characteristics of excitation systems.
- EEL 6561 Fourier Optics** 3 cr (3,0)
Application of Fourier transform theory to optical systems design. Development of optical correlation techniques. Holographic techniques and applications.
- EEL 6564 Optical Communication Theory** 3 cr (3,0)
PR: EEL 6530 or C.I. Optical communication schemes; Statistical modelling; coherent and non-coherent detection time synchronization channel characterization.

- EEL 6565 Infrared Technology** 3 cr (3,0)
PR: C.I. Analysis of infrared systems radiation theory, sources, atmospheric transmission, detection, noise, materials, optical design, system design.
- EEL 6590 Advanced Topics in Communications** 3 cr (3,0)
PR: C.I. Advanced and current topics in communications, such as coding theory, information theory, spread spectrum, etc.
- EEL 6616 Adaptive Control** 3 cr (3,0)
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 Fundamentals of Modern Multivariable Control** 3 cr (3,0)
PR: EEL 4657, EEL 5173 or C.I. Emphasis on stability and performance analysis in time and frequency domains and on design tools for optimal performance and robustness.
- EEL 6621 Nonlinear Control Systems** 3 cr (3,0)
PR: EEL 5173. Phase plane descriptions of non-linear phenomena, limit cycles, jump conditions, stability, describing functions, Liapunov and Popov theory, time and frequency domain analysis for non-linear systems.
- EEL 6671 Modern and Optimal Control Systems** 3 cr (3,0)
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 Optimal Estimation for Control** 3 cr (3,0)
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 Advanced Topics in Modern Control Systems** 3 cr (3,0)
PR: C.I. To introduce the student to present-day issues in control systems analysis, design, and implementation.
- EEL 6755 VLSI Design of Digital Signal Processors** 3 cr (3,0)
PR: EEL 5173 and EEL 6502 (or C.I.) Signal processing techniques and algorithms as applied to digital filters, detection, and estimation. VLSI design methodology and components are applied to signal processors.
- EEX 6266 Assessment and Curriculum Prescriptions for the Exceptional Population** 3 cr (3,0)
The class addresses contemporary assessments and models for assessing exceptional children. Curriculum design and prescription are also addressed.
- EGN 5034 Engineering and Public Works** 3 cr (3,0)
PR: C.I. The purposes, function, and role of engineering within public works.
- EGN 5035 Topics in Technological Development** 3 cr (3,0)
PR: C.I. Selected topics in the technological development of western civilization including the weight-driven clock, steam engine, electric light, etc.
- EGN 5036 Engineering Codes and Standards** 2 cr (2,0)
PR: C.I. Development, history, and function of engineering codes and standards and their use in protecting public health and safety.
- EIN 5117 Management Information Systems I** 3 cr (3,0)
PR: C.I. Design and implementation of computer-based management information systems. Organizational, managerial, and economic aspects of MIS.
- EIN 5248C Ergonomics** 3 cr (2,2)
PR: C.I. Applications of anthropometry; functional anatomy, mechanics, and physiology of the musculo-skeletal concepts in the engineering design of industrial tools, equipments and workstations.
- EIN 5255 Training Simulator Engineering** 3 cr (3,0)
Introduction to significant topics relative to the development and use of simulators for knowledge transfer in the technical environment.
- EIN 5381 Engineering Logistics** 3 cr (3,0)
Study of the logistics life-cycle involving planning, analysis and design, testing, production, distribution, and support.

- EIN 5388 Forecasting** 3 cr (3,0)
PR: STA 3032 or STA 5156, ESI 5170. Industrial applications of forecasting methods with emphasis on microcomputer based packages.
- EIN 5415 Tool Engineering and Manufacturing Analysis** 3 cr (3,0)
PR: EIN 4391 or C.I. Tool materials and design, tolerance technology, theory of metal cutting, and machineability.
- EIN 5602C Expert Systems in Industrial Engineering** 3 cr (2,2)
Overview of basic concepts, architecture and construction of expert systems in IE. Intelligent simulation training systems, case studies and problems. Laboratory exercises.
- EIN 6140 Project Engineering** 3 cr (3,0)
PR: C.I. Role of engineer in project management, emphasis on qualitative and quantitative techniques in planning, organization supervision, control of projects from conceptual design to field installation; applications via term project.
- EIN 6215 System Safety Engineering and Management** 3 cr (3,0)
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 Biomechanics** 3 cr (2,2)
PR: EIN 5248C or consent of instructor. 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 6258 Ergonomics in High Tech Environments** 3 cr (2,2)
PR: EIN 6249C and EIN 6270C or C.I. Integration of man-machine concepts to the ergonomics applications in the design of physical man-machine properties.
- EIN 6264C Environmental Hygiene and Occupational Health** 3 cr (2,2)
PR: EIN 5215 or C.I. Evaluation and control of mechanical, physical, and chemical environment. Environments considered include heat, cold, noise, vibration, light pressure, radiation, solid waste, air contaminants, etc.
- EIN 6270C Work Physiology** 3 cr (2,2)
PR: EIN 5248 or C.I. Applications of the concepts of endurance fatigue, recovery and the energy cost of work in the determination of work capacity, job design, personnel assignment, and work/rest scheduling.
- EIN 6317 Training Systems Engineering** 3 cr (3,0)
How human performance deficiencies should be addressed from a systems engineering point of view. Manpower, personnel, and training considerations will be examined.
- EIN 6322 Engineering Management** 3 cr (3,0)
PR: C.I. Investigate special topics for improvements of engineering enterprises in nationally and internationally competitive environments. Topics may include organization structure, motivation theory, technology management and entrepreneurship.
- EIN 6330 Quality Control in Automation** 3 cr (3,0)
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 Production & Inventory Control** 3 cr (3,0)
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 Productivity Engineering** 3 cr (3,0)
Basic concepts and tools including measurement, evaluation, planning, and improvement. Latest models and techniques pertinent to both the manufacturing and service sectors are introduced.

EIN 6357 Advanced Engineering Economic Analysis 3 cr (3,0)
PR: EGN 3613; STA 3032 or equivalent. Topics include measuring economic worth, economic optimization under constraints. Analysis of economic risk and uncertainty, foundations of utility functions.

EIN 6392C Manufacturing Systems Engineering 3 cr (2,2)
PR: EIN 4391C. The integration of manufacturing technologies and information processing concepts into a system for controlling the manufacturing enterprise.

EIN 6417 Precision Engineering 3 cr (3,0)
PR: ESI 4234 or C.I. Designing for high precision, machine accuracy, error reduction, thermal effects, coordinate measuring machines, and machine calibration with laser interferometry.

EIN 6418C Electronics Manufacturing 3 cr. (3,0)
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 Scheduling and Sequencing 3 cr (3,0)
Basic problems, models and techniques of scheduling. Emphasis on general job shop scheduling problems. Analytical, graphical and heuristic methods are examined.

EIN 6603 Readings in Expert Systems/AI in Industrial Engineering 3 cr (3,0)
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 6605C Robotics and Automated Systems 3 cr (3,2)
PR: 4411C or equivalent. Robotic cells and automated systems design for industrial applications, on-line and off-line programming.

EIN 6607C Computer Numerical Control 3 cr (2,2)
Computer numerical control (NC) systems and languages. Surface and part definition.

EIN 6608 Surface Design and Manufacture 3 cr (3,0)
Techniques for designing surfaces and parts, and methods for describing their manufacture.

EIN 6645 Modeling and Simulation of Real-time Processes 3 cr (3,0)
Mathematical modeling and computer simulation of engineering and scientific systems. Examination of hardware, software and solution methods for real-time systems.

EIN 6647 Intelligent Simulation 3 cr (2,2)
The use of intelligent objects in building simulation models to achieve a goal by altering the scenarios during problem solution.

EIN 6649 Intelligent Simulation Training System Design 3 cr (2,2)
A systems approach to building intelligent simulation training systems. Emphasis on removing the human instructor from the content training.

EIN 6933 Systems Acquisition 3 cr (3,0)
What the engineer needs to know about the systems acquisition process when dealing with government contracting agencies.

EMA 5106 Metallurgical Thermodynamics 3 cr (3,0)
PR: EGN 3343, EGN 3365C. First and second law treatment, solid state kinetics, and phase diagram representation of metallic and alloy systems.

EMA 5108 Surface Science 3 cr (3,0)
PR: PHY 3049 and C.I. Methods of chemical and physical analysis of surfaces, with emphasis on ultra-high vacuum spectroscopies utilizing electron, ion and photon probes.

EMA 5126 Physical Metallurgy 3 cr (3,0)
PR: EML 3236 or C.I. Study of strengthening mechanisms and phase transformations in metals and alloys.

- EMA 5140 Introduction to Ceramic Materials** 3 cr (3,0)
PR: EGN 3363. Uses, structure, physical and chemical properties, and processing of ceramic materials. Discussions will include recent developments for high technology applications.
- EMA 5163 Polymer Science and Engineering** 3 cr (3,0)
PR: EGN 3363. Molecular structure, physical and chemical properties, preparation and processing of macromolecular materials. Discussions will include recent developments for high technology applications.
- EMA 5304 Scanning Electron Microscopy, Principles and Practice** 3 cr (2,2)
PR: PHY 3049 and C.I. The principles of operation of electron microscopes, specimen preparation, special techniques with emphasis on scanning microscopy and microprobe analysis.
- EMA 5326 Corrosion and Electrochemical Engineering** 3 cr (3,0)
PR: EGN 3363. Electrochemical principles and applications to detecting and monitoring corrosion processes. Various forms of corrosion, their causes and control. Application in electric vehicles and electrochemical machining.
- EMA 5504 Modern Characterization Techniques for Materials** 3 cr (3,0)
PR: EMA 5108. Practical approach and demonstrations of materials characterization emphasizing state of the art techniques.
- EMA 5626 Mechanical Metallurgy** 3 cr (3,0)
PR: EML 3234 or C.I. Study of the microscopic mechanical behavior of metals and alloys with emphasis on fracture, fatigue and creep.
- EMA 6136 Diffusion in Solids** 3 cr (3,0)
PR: EGN 3343, EGN 3363, EML 5533. Fundamental equations and mechanisms of diffusion. Diffusion in metallic, ionic and semiconducting materials with emphasis on measurement techniques.
- EMA 6628 Materials Failure Analysis** 3 cr (3,0)
PR: EMA 5626 or C.I. Comprehensive overview of the general procedures for failure analysis, failure theories, fractography of different failures and modern analytical tools.
- EML 5152 Intermediate Heat Transfer** 3 cr (3,0)
PR: EML 4142, EML 5713, EML 5533 or C.I. An intermediate level course dealing with heat and mass diffusion, boundary layer problems, and radiation from real bodies. Emphasis on combined modes, numerical methods.
- EML 5224 Acoustics** 3 cr (3,0)
PR: MAP 3302, EML 4220, PHY 3049. 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 5228 Modal Analysis** 3 cr (3,0)
PR: EML 4220, EML 4304, EML 5533. Theoretical basis. Measurement techniques, excitation, transducers, data acquisition. Detailed data analysis, modal parameter extraction, curve-fitting procedures. Modelling.
- EML 5237 Intermediate Mechanics of Materials** 3 cr (3,0)
PR: EGN 3331, EGN 3500 or C.I. Elements of elasticity. Failure theories. Bending and torsion. Thin plates. Energy principles. Thick-walled cylinders. Applications to design.
- EML 5245 Tribology** 3 cr (3,0)
PR: EGN 3331, EGN 3353, EGN 3365C, or C.I. Principles of fluid film lubrication (liquid and gas, journal and thrust bearings), contact mechanics (rolling element bearings), design of bearings and load bearing surfaces, friction and wear of materials, tribotesting.
- EML 5402 Turbomachinery** 3 cr (3,0)
PR: EAS 4134 or EML 4703 or C.I. Application of the principles of fluid mechanics, thermodynamics and aerodynamics to the design and analysis of pumps, compressors, and turbines.
- EML 5532 Computer-aided Design for Manufacture** 3 cr (2,2)
PR: EGN 3331 and EML 3500 or C.I. Theory and application of computer algorithms for the synthesis, simulation, design and manufacture of mechanical and thermal systems.
- EML 5533 Mathematical Methods in Mechanical and Aerospace Engineering** (pending) 3 cr (3,0)
PR: MAP 3302. Applications of vector operations and theorems, line integrals and curvilinear coordinates to heat transfer and fluid mechanics problems. Solution of heat transfer and fluid mechanics problems by complex analysis and integral methods.

- EML 5546 Engineering Design with Composite Materials** 3 cr (3,0)
PR: EAS 4200, or EML 3500. 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 5584 Biomechanics and Biomaterials** 3 cr (3,0)
PR: EGN 3363 and EGN 3331. Properties of natural biological materials and their relation to microstructure, biocompatibility, artificial biomaterials and their applications, with analysis of biomechanical forces of the body.
- EML 5572 Probabilistic Methods in Mechanical Design** 3 cr (3,0)
PR: EML 3500, STA 3032. Uncertainty modelling in design. Use of probabilistic mathematics to assess strength, stiffness, toughness, and stability. Applications.
- EML 5713 Intermediate Fluid Mechanics** 3 cr (3,0)
PR: EML 4703. CR: EML 5533 or C.I. Fluid kinematics; conservation equations; Navier-Stokes equations; boundary layer flow; inviscid flow; circulation and vorticity; low Reynolds number flow; turbulence.
- EML 6062 Boundary Element Methods in Engineering** 3 cr (3,0)
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; boundary element solution of elastostatic problems.
- EML 6067 Finite Elements in Mechanical and Aerospace Engineering I** 3 cr (3,0)
PR: EML 5237 or EML 5713 or C.I. 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 Finite Elements in Mechanical and Aerospace Engineering II** 3 cr (3,0)
PR: EML 6067 or C.I. Advanced finite element applications to aerospace and mechanical components and structures. Rotating systems. Fracture mechanics. Aeroelasticity. Buckling. Impact. Use of codes.
- EML 6104 Classical Thermodynamics** 3 cr (3,0)
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 6105 Statistical Thermodynamics** 3 cr (3,0)
PR: EGN 3343, PHY 3421. Statistical approach to thermodynamic concepts, laws, and methods of analysis. Generalized p-v-T data. Special systems.
- EML 6124 Two-Phase Flow** 3 cr (3,0)
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 6131 Combustion Phenomena** 3 cr (3,0)
PR: EML 5152. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation, aerodynamics and stability of premixed and diffusion flames.
- EML 6154 Conduction Heat Transfer** 3 cr (3,0)
PR: EML 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 Convection Heat Transfer** 3 cr (3,0)
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 Radiation Heat Transfer** 3 cr (3,0)
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 Gaseous Radiation Heat Transfer** 3 cr (3,0)
PR: EML 6157. Development of Radiative Transfer Equation, radiative properties of gases, and solutions to gaseous radiation problems.
- EML 6211 Continuum Mechanics** 3 cr (3,0)
PR: EML 5237, EML 4703 or equivalent. Tensors; deformation and strain; stress; field equations, constitutive equations, applications in fluid dynamics and linear elasticity.

- EML 6223 Advanced Vibrational Systems** 3 cr (3,0)
PR: EML 5271 or C.I. Mechanical systems with multi-degrees-of-freedom. Introduction to non-linear and random vibrations. Concepts of modern dynamic analysis.
- EML 6226 Analytical Dynamics** 3 cr (3,0)
PR: EML 5271. Kane method for kinematics and dynamics of particle and rigid bodies is developed and contrasted with Newton and Lagrange methods.
- EML 6227 Nonlinear Vibration** 3 cr (3,0)
PR: MAP 3302 and EML 4220 or C.I. Robust, reliable algorithms for simulation of non-linear phenomena; phase planes; limit cycles; stability; period-multiplying bifurcations; strange attractors; Poincare maps; Floquet theory; Lyapunov exponents; applications to mechanical and aerospace systems.
- EML 6271 Dynamics** 3 cr (3,0)
PR: EGN 3321, EML 4220 or C.I. Dynamics of particles, rigid bodies and distributed mass systems. Hamilton's principle. Lagrange's equations. Numerical methods. Mechanisms.
- EML 6279 Synthesis of Mechanisms** 3 cr (3,0)
PR: EML 5271 or C.I. Advanced synthesis, analysis, and design of planar and spatial mechanisms. Inversion techniques; computer applications; design of robotic manipulators.
- EML 6305C Experimental Mechanics** 3 cr (2,2)
PR: EML 4304. Selected topics in strain measurements, photoelasticity, holographic interferometry; laser speckle measurement; acoustic emission, measurement of correlation and coherence functions.
- EML 6311 System Control** 3 cr (3,0)
PR: EML 4312, EML 5533. Theoretical, experimental and computer methods involved in the design of control systems. Emphasis on non-linear systems and advanced methods for control system analysis and optimization.
- EML 6531 Mechanical Behavior of Materials** 3 cr (3,0)
PR: EML 5237 or C.I. Failures of materials in mechanical design. Macroscopic concepts of damage tolerance, life prediction and fracture control. Introduction to plasticity, creep, fretting, shock, instability and wear.
- EML 6547 Engineering Fracture Mechanics in Design** 3 cr (3,0)
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 Theory of Elasticity** 3 cr (3,0)
PR: EML 5237. Review of stress and strain; solution by tensor stress and potential functions, axisymmetric problems; wave propagation.
- EML 6712 Mechanics of Viscous Flow** 3 cr (3,0)
PR: EML 5713, EML 5533 or C.I. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.
- EML 6725 Computational Fluid Dynamics & Heat Transfer I** 3 cr (3,0)
PR: EML 5152 or C.I. Finite Difference methods; error and stability analysis; applications to model equations and further developments; matrix methods.
- EML 6726 Computational Fluid Dynamics & Heat Transfer II** 3 cr (3,0)
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.
- ENV 5071 Environmental Analysis of Transportation Systems** 3 cr (3,0)
PR: EGN 3704, ENV 4121C or C.I. The course deals with the environmental process needed for the successful planning of transportation projects. the analysis of noise, air quality, wetlands, and other environmental areas will be covered in addition to abatement measures.
- ENV 5045L Research Methods in Environmental Engineering** 1 cr (0,2)
PR: STA 3032, ENV 4561 or C.I. Experimental design and modeling of environmental engineering systems using fundamental concepts of computer programming, probability and statistics.
- ENV 5413 Outdoor Noise Control** 3 cr (3,0)
PR: C.I. Community noise evaluations and control, legislative standards, instrumentation and measurement, abatement methods, and noise modeling.

- ENV 5415C Potable Water Treatment** 3 cr (2,3)
PR: EES 4202 and 4111. Engineering application of potable water chemistry involving coagulation, softening, filtration, corrosion, disinfection quality and drinking water.
- ENV 5505 Sludge Management Operations in Environmental Engineering** 3 cr (3,0)
PR: ENV 4561. Theory and design of sludge management operations and processes in environmental engineering, including stabilization dewatering and ultimate disposal.
- ENV 5335 Hazardous Waste Management** 3 cr (3,0)
PR: EGN 3704 or C.I. Engineering planning and analysis associated with the handling, storage, treatment, transportation, and disposal of hazardous wastes.
- ENV 5615 Environmental Impact Assessment** 3 cr (3,0)
PR: C.I. Estimating, predicting, and evaluating the effects of projects, processes, and systems upon the environment, and upon human society.
- ENV 6015 Physical/Chemical Treatment Systems in Environmental Engineering** 3 cr (3,0)
PR: ENV 4561 and EES 4202 or C.I. Theory and design of physical and chemical operations and processes in environmental engineering using latest technologies.
- ENV 6016 Biological Treatment Systems in Environmental Engineering** 3 cr (3,0)
PR: EES 4111 and ENV 4561 or C.I. Theory and design of biological operations and processes in environmental engineering using the latest technologies.
- ENV 6017L Unit Operations & Processes Laboratory** 3 (1,6)
PR: ENV 6015, ENV 6016, STA 3032 or C.I. Laboratory exercises in physical, chemical, and biological processes applicable to design. Experimental design and modeling of environmental engineering systems.
- ENV 6018 Environmental Engineering Process Control** 3 cr (3,0)
PR: EGN 4703, ENV 4561. Environmental systems using feedback and feedforward real-time Laplace or frequency domain dynamics.
- ENV 6055C Fate and Transport of Subsurface Contaminants** 3 cr (3,0)
PR: EES 4202, EES 4111. Principal concepts and modeling of the physical, chemical, and biological transport and transformation processes for subsurface contaminants.
- ENV 6106 Theory and Practice of Atmospheric Dispersion Modeling** 3 cr (3,0)
PR: ENV 4121 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 Design of Air Pollution Controls** 3 cr (3,0)
PR: ENV 4121. Current methods for engineering design and performance analysis of air pollution control equipment to include scrubbers, baghouses, electrostatic precipitators, VOC incinerators, others.
- ENV 6347 Hazardous Waste Incineration** 3 cr (3,0)
Theory and applications of design and operations of hazardous waste incinerators. Includes detailed consideration of air pollution control equipment.
- ENV 6356 Solid Wastes Management** 3 cr (3,0)
PR: ENV 4341 or C.I. Study of the extent and characteristics of the solid waste problem, collection and disposal systems, environmental modeling and selected designs.
- ENV 6519 Aquatic Chemical Processes** 3 cr (3,0)
PR: EES 4202 and EES 4401 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 Industrial Waste Treatment** 3 cr (3,0)
PR: ENV 4561. Theories, methods, unit operations of management, reduction, treatment, disposal of industrial wastes.
- ENV 6565 Water and Wastewater Systems Design** 2 cr (2,0)
PR: ENV 4505 or C.I. Project course on design of water and wastewater systems.
- ENV 6616 Receiving Water Impacts** 3 cr (3,0)
PR: EES 4202 and 4111 or C.I. Study of fate and transport of pollutant loadings into receiving waters, based upon physical, chemical, and biological interactions in natural systems.

- ESI 5236 Reliability Engineering** 3 cr (3,0)
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 5316 Operations Research** 3 cr (3,0)
PR: EGN 4634 or C.I. Methods of operations research including formulation for models and derivation of solutions; linear programming, network models queuing theory, simulation and nonlinear optimization techniques.
- ESI 5451 Network Based Project Planning, Scheduling and Control** 3 cr (3,0)
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 Discrete Systems Simulation** 3 cr (3,0)
PR: STA 3032 or STA 5156, COP 3215. Methods for performing discrete systems simulation, including network modeling, will be treated.
- ESI 6217 Statistical Aspects of Digital Simulation** 3 cr (3,0)
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 Quality Assurance Management** 3 cr (3,0)
PR: ESI 4234 or equivalent or C.I. Implementation and management of the quality assurance function. Planning and organization for quality, quality cost, Quality Audit and Corrective Actions.
- ESI 6225 Quality Analysis and Control** 3 cr (3,0)
PR: ESI 4234 or equivalent. Methods for quality improvement, statistical process control (SPC), process capability, sampling plans, MIL-STDs and Taguchi Methods.
- ESI 6227 Total Quality Management** 3 cr (3,0)
PR: ESI 6225 or equivalent. Origins and practices of the U.S. TQM movement. TQM as a competitive strategy. Productivity and performance improvement strategies with TQM.
- ESI 6336 Queuing Systems** 3 cr (3,0)
PR: STA 5156. Analysis of queuing systems and waiting line problems using analytical and Monte Carlo methods. Laboratory assignments.
- ESI 6358 Decision Analysis** 3 cr (3,0)
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 Linear Programming and Extensions** 3 cr (3,0)
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 6xxx Network Analysis and Integer Programming** 3 cr (3,0)
PR: ESI 6427. Modelling and solution methods for problems that can be formulated in terms of flow in networks and for discrete optimization problems.
- ESI 6437 Nonlinear Mathematical Programming and Dynamic Programming** 3 cr (3,0)
PR: ESI 4312 or ESI 5316. Optimality conditions and algorithms for unconstrained and constrained nonlinear problems. Introduction to dynamic programming approach to multistage problems.
- ESI 6529 Advanced Systems Simulation** 3 cr (3,0)
PR: ESI 5531. Combined networks discrete and continuous simulation, applications, statistical analysis and comparison of simulation languages.
- ESI 6532 Object-oriented Simulation** 3 cr (2,2)
Object-oriented modeling and development techniques for building large process-based discrete event simulation models. Concurrency in discrete event simulation. Object-oriented simulation environment.
- MET 5710 Meteorology for Engineers** 3 cr (3,0)
PR: MAC 3313. Studies of the atmospheric processes from physical thermodynamics and synoptic viewpoints.

STA 5156 Probability and Statistics for Engineers	3 cr (3,0)
PR: STA 3032 or equivalent. Theory and applications of discrete and continuous random variables, hypothesis tests, confidence intervals, regression analysis, and correlation.	
TTE 5204 Traffic Engineering	3 cr (3,0)
PR: TTE 4004.	
TTE 5205 Highway Capacity and Traffic Flow Analysis	3 cr (3,0)
PR: TTE 4004. Highway capacity for all functional classes of highways. Traffic signalization; including traffic studies, warrants, cycle length, timing, phasing and coordination.	
TTE 5805 Geometric Designs of Transportation Systems	3 cr (3,0)
PR: TTE 4004. Study of geometric and construction design elements in the engineering of transportation systems.	
TTE 5835 Pavement Design	3 cr (3,0)
PR: CEG 4101. Pavement types, wheel loads, stresses in pavement components, design factors such as traffic configurations, environmental, economic, drainage, and materials.	
TTE 6526 Planning and Design of Airports	3 cr (3,0)
PR: C.I. Background of aviation and airport development, aircraft characteristics. Planning and design of airport components. Heliport and STOL ports and pavement and drainage design.	
TTE 6625 Mass Transportation Systems	3 cr (3,0)
PR: C.I. Planning, design, construction, operation, and administration of mass transportation systems.	
TTE 6971 Treatise (Thesis or Research Report)	3-6 cr

- STA 8155 Probability and Statistics for Engineers
PR: STA 3025 or equivalent. Theory and applications of discrete and continuous random variables, hypothesis tests, confidence intervals, regression analysis, and correlation.
3 cr (3,0)
- TTE 5204 Traffic Engineering
PR: TTE 4104
3 cr (3,0)
- TTE 5208 Highway Capacity and Traffic Flow Analysis
PR: TTE 4004 Highway capacity for all functional classes of highways. Traffic signalization, including traffic studies, warrants, cycle length, timing, phasing and coordination.
3 cr (3,0)
- TTE 5209 Geometric Design of Transportation Systems
PR: TTE 4004 Study of geometric and construction design elements in the engineering of transportation systems.
3 cr (3,0)
- TTE 5235 Pavement Design
PR: CEG 4101 Pavement types, stresses in pavement components, design factors such as traffic configurations, environmental, economic, drainage, and materials.
3 cr (3,0)
- TTE 5255 Planning and Design of Airports
PR: C.I. Background of aviation and airport development, airport characteristics. Planning and design of airport components. Hallsport and STOL ports and pavement and drainage design.
3 cr (3,0)
- TTE 5258 Mass Transportation Systems
PR: C.I. Planning, design, construction, operation, and administration of mass transportation systems.
3 cr (3,0)
- TTE 5271 Thesis (Thesis or Research Report)
3-6 cr

COLLEGE OF HEALTH AND PUBLIC AFFAIRS

The College of Health and Public Affairs offers five graduate programs: the Master of Arts in Communicative Disorders, the Master of Science in Health Sciences, the Master of Science in Molecular Biology and Microbiology, the Master of Public Administration, and the Master of Social Work. The mission of the College of Health and Public Affairs is to provide undergraduate and graduate education, to foster, through research, the development and transmission of knowledge, and to offer continuing education for community professionals and citizens.

COLLEGE ADMINISTRATION

<i>B. R. McCarthy</i>	Dean
<i>W. C. Lawther</i>	Associate Dean and Associate Professor
<i>M. J. Edwards</i>	Associate Dean and Associate Professor

Faculty

Communicative Disorders

<i>D. L. Hedrick, Ph.D.</i>	Professor
<i>D. L. Ratusnik, Ph.D.</i>	Professor
<i>D. B. Ingram, Ph.D.</i>	Associate Professor
<i>T. A. Mullin, Ph.D.</i>	Associate Professor
<i>H. A. Utt, Ph.D.</i>	Assistant Professor
<i>H. Parker, M.A.</i>	Assistant Professor

Health Sciences

<i>J. Acierno, M.D.</i>	Professor
<i>J. F. Bergner, Ph.D.</i>	Professor
<i>D. J. Crittenden, Ph.D.</i>	Associate Professor
<i>M. J. Edwards, Ph.D.</i>	Associate Professor
<i>J. S. Lytle, M.P.H.</i>	Associate Professor
<i>T. S. Mendenhall, Ph.D.</i>	Associate Professor
<i>D. F. Hitchcock, M.S.</i>	Assistant Professor

Molecular Biology and Microbiology

<i>R. N. Gennaro, Ph.D.</i>	Chair and Associate Professor
<i>O. M. Berringer, Ph.D.</i>	Professor
<i>M. J. Sweeney, Ph.D.</i>	Professor
<i>R. S. White, Ph.D.</i>	Professor
<i>R. J. Wodzinski, Ph.D.</i>	Professor
<i>J. F. Charba, Ph.D.</i>	Associate Professor
<i>R. J. Laird, Ph.D.</i>	Associate Professor
<i>D. W. Washington, Ph.D.</i>	Associate Professor

Public Administration

<i>R. B. Denhardt, Ph.D.</i>	Chair and Professor
<i>P. W. Colby, Ph.D.</i>	Professor
<i>R. A. Shapek, Ph.D.</i>	Professor
<i>W. C. Lawther, Ph.D.</i>	Associate Professor
<i>K. Denhardt, Ph.D.</i>	Assistant Professor
<i>J. D. Jurie, D.P.A.</i>	Assistant Professor
<i>E. Rosell, D.P.A.</i>	Assistant Professor
<i>M. P. Aristigueta, M.P.A.</i>	Instructor

Social Work

Kenneth J. Kazmerski, D.S.W.	Chair and Associate Professor
E. K. Suh, Ph.D.	Associate Professor
E. M. Abel, M.S.W.	Assistant Professor
D. M. Boyer, M.S.W., M.P.H.	Assistant Professor
C. E. Green, Ph.D.	Assistant Professor

PROGRAMS IN COMMUNICATIVE DISORDERS

Professional education is offered in Communicative Disorders leading to the Master of Arts degree in Speech-Language Pathology. The program requires the equivalent of two years full-time attendance to complete and is designed to meet the certification requirements of the American Speech-Language-Hearing Association. The program is accredited by the Educational Standards Board of the American Speech-Language-Hearing Association.

The faculty is keenly aware of the need for combining clinical skills with theoretical foundations. Supervised student practica are offered in the Communicative Disorders Clinic on campus as well as in external settings. Selected outstanding professionals in Central Florida (physicians, speech/language pathologists) make up the clinical faculty which supplements the clinical expertise of the regular faculty.

All students will enroll in SPA 6505 or 6506, Clinical Practica, or equivalents, each semester in attendance, with the exception of the semester they are enrolled in SPA 5553L, Differential Diagnosis in Speech and Language Laboratory, and the semester they are completing the thesis/non-thesis option. Students must complete 300 clock hours of practicum experience as outlined by the American Speech-Language-Hearing Association before graduation.

Master of Arts in Communicative Disorders Degree Requirements

Dona Hedrick Graduate Program Coordinator
Office: HPB 113, Phone (407) 823-2121

PREREQUISITES

B.A. in Speech and Hearing (Communicative Disorders) or special prerequisite courses to be arranged with the program coordinator.

All students must take STA 4163, Statistical Methods II, or equivalent, and achieve a grade of "C" or better prior to, or during, their graduate program. This course is a prerequisite to SPA 5805, Research in Communicative Disorders.

REQUIRED COURSES

39 Semester Hours

SPA	5307	Differential Diagnosis in Audiology	3 hours
SPA	5554	Therapeutic Communication	3 hours
SPA	5600	Administration and Management of Communicative Disorders	3 hours
SPA	5805	Research in Communicative Disorders	3 hours
SPA	6410	Language Problems in Adults	4 hours
SPA	5225	Fluency Disorders	3 hours
SPA	5225L	Fluency Disorders Laboratory	1 hour
SPA	5553	Differential Diagnosis in Speech and Language	3 hours
SPA	5553L	Differential Diagnosis in Speech and Language Laboratory	1 hour
SPA	6132	Measurements in Speech Science	3 hours
SPA	6204	Advanced Studies in Communicative Disorders: Articulation	3 hours
SPA	6204L	Articulation Laboratory	1 hour
SPA	6211	Voice Disorders	3 hours
SPA	6211L	Voice Disorders Laboratory	1 hour
SPA	6403	Advanced Studies in Communicative Disorders: Language	4 hours

PRACTICUM credit toward degree

6 Semester Hours

All students must register for three hours each semester while in attendance, with exceptions as noted.

THESIS/NON-THESIS OPTIONS

Each student will complete a thesis or non-thesis option.

Thesis Option

6 Semester Hours

Students selecting the thesis option will complete a thesis in the area of speech/language pathology for six semester hours of credit. An advisory committee of three faculty members, chaired by a departmental faculty member, will be selected to guide the student through the thesis requirements. An oral defense of the thesis is required.

Non-thesis Option

7 Semester Hours

A student selecting the Clinical Internship option must complete 6 semester hours of Internship in Speech-Language Pathology. In addition, a student in the Clinical Internship option must register for one hour of Directed Research.

EXAMINATIONS

A final comprehensive examination on course work is required. This examination must be passed before a student can be considered a degree candidate.

Total Minimum Semester Hours Required:

Speech-Language Pathology 51

HEALTH SCIENCES

TBAGraduate Program Coordinator
Office: HPB 220, Phone (407) 823-2972

Admission

Admission to graduate status in the Master of Science in Health Sciences (M.S.) 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 (4.0 = A) for the last 60 semester hours of credit earned for the baccalaureate degree, and a Graduate Record Examination (GRE) score of at least 840; or a grade point average (GPA) of at least 2.75 (4.0 = A) for the last 60 semester hours of credit earned for the baccalaureate degree and a GRE score of at least 1000. The GRE score cannot be over 7 years old.

or

A graduate degree from a regionally accredited institution.

A GRE test is required of all graduate students whether accepted on the GPA, GRE or previous degree.

- 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 United States health care system, basic statistics, and human disease.

In accordance with SUS and UCF policy, a limited number of students who do not meet all the requirements for regular admission to the Health Sciences Program but who show promise of success may be admitted in a provisional status.

Admission into graduate status in the program will be determined three times a year (about four weeks prior to the beginning of each semester). Students must have required admission materials on file with the Health Sciences Program in order to be considered for graduate status.

Programs in Health Sciences

The Master of Science degree in Health Sciences is divided into three sections. The first section is a core of courses to provide an in-depth foundation in scientific investigation, the fundamentals of human pathophysiology, and a broad understanding of the health care systems in the United States in comparison to systems in other nations.

The second section involves courses in the specialization areas of management, education, or advanced clinical training. The advanced clinical training areas include cardiopulmonary sciences and medical laboratory sciences. Other advanced clinical training areas will be added as resources permit.

The third section involves courses from other colleges that are cognate to the student's discipline. These courses, in keeping with particular needs, interests, and backgrounds, will be primarily in biochemistry, biology, computer sciences, management or education. Practica will be offered which will enable the student to apply the knowledge gained through the course work to teaching in a health discipline, management of a health educational program, management of a clinical department, or advanced clinical research.

Each student will complete either a thesis or research report after completing the course work.

Degree Requirements

All students must complete the core courses. In addition students, with the assistance of an advisor, will complete a program of study consistent with career objectives.

Comprehensive Examination

An oral or written comprehensive examination is required of all students in the Health Sciences Program. The comprehensive examination will be taken within the first four weeks of the term in which the student expects to graduate. Examinations will receive an evaluation of "pass," "conditional pass," or "fail." If a student receives a "conditional pass" on the comprehensive examination, an oral or written re-examination will have to be taken and passed. A failed examination will receive no retest. All students must successfully pass the comprehensive examination in order to graduate.

REQUIRED CORE

			12 Semester Hours
HSC	6636	Issues and Trends in the Health Professions	3 hours
HSC	6911	Scientific Inquiry in the Health Professions	3 hours
PHC	6000	Epidemiology	3 hours
STA	5206	Statistical Analysis	3 hours

AREA OF EMPHASIS (See requirements for each)

21-26 Semester Hours

RESEARCH REPORT

or

3 Semester Hours

THESIS

6 Semester Hours

If the thesis option is chosen, 3 hours less are required in Group B electives.

AREAS OF EMPHASIS

Students must select one of the following three options:

1. Health Services Administration Option

24 Semester Hours

Students must select a minimum of 15 hours from Group A and 9 hours from Group B. Other courses may be substituted for these electives with approval of a faculty advisor.

Group A: Health Care Management Courses

15 Semester Hours

HSA	5198	Information Systems and Computer Applications in Medicine	3 hours
HSA	6107	Health Care Organization and Management I	3 hours
HSA	6108	Health Care Organization and Management II	3 hours
HSA	6815	Practicum in Health Care Management	3 hours
PHC	6160	Health Care Finance	3 hours
PHC	6420	Case Studies in Health Law	3 hours

Group B: Electives

9 Semester Hours

ACG	5005	Financial Accounting Concepts	3 hours
ECO	5005	Economic Concepts	3 hours
FIN	5405	Financial Concepts	3 hours
MAN	6206	Organizational Behavior and Management	3 hours
MAR	5055	Marketing Concepts	3 hours
MAR	6606	Marketing Research Methods	3 hours

PAD	6335	Strategic Planning and Management	3 hours
PAD	6417	Human Resource Management	3 hours
PAD	6700	Analytic Techniques for Public Administration I	4 hours
PAD	6701	Analytic Techniques for Public Administration II	4 hours
RMI	6008	Risk Management	3 hours
Elective to be selected with advisor's consent			3 hours

Total Minimum Semester Hours Required: 39

2. Education Option

24 Semester Hours

Students must select a minimum of 12 hours from Group A and 12 hours from Group B. Other courses may be substituted for these electives with approval of a faculty advisor.

Group A: Health Care Education Courses 12 Semester Hours

HSC	6247	Health Science Education	3 hours
HSC	6306	Health Science Program Development and Operation	3 hours
HSC	6245	Community Health Education	3 hours
HSC	6815	Practicum in Health Science Education	3 hours

Group B: Electives 12 Semester Hours

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6259	Strategies of Classroom Management	3 hours
EDF	6401	Statistics for Educational Data	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EME	5208	Media and Methods in Teaching	3 hours
ESE	6235	Curriculum Design	3 hours
EVT	5315	Applied Clinical Teaching Techniques in Vocational Education	3 hours
EVT	5316	Clinical Coordination for the Health Occupations Teacher	3 hours
HSA	5198	Information Systems and Computer Applications in Medicine	3 hours
HSA	6107	Health Care Organization and Management I	3 hours
PHC	6420	Case Studies in Health Law	3 hours

Total Minimum Semester Hours Required: 39

3. Advanced Clinical Skills and Research Option

This option offers two areas of specialization: cardiopulmonary sciences and medical laboratory sciences.

a. Specialization in Cardiopulmonary Sciences 25 Semester Hours

This specialization is offered by the Cardiopulmonary Science Department and is designed to provide the professional with a sound scientific background in the cardiopulmonary sciences. Persons interested in advanced clinical practice, rehabilitation programs, exercise physiology, pulmonary function testing and basic research may find this specialization useful.

Group A: Cardiopulmonary Sciences Courses 13 Semester Hours

HSA	5198	Information Systems and Computer Applications in Medicine	3 hours
RET	5937	Special Topics: Advanced Study in Cardiopulmonary Physiology with Lab	4 hours
RET	5937	Special Topics: Research Methods in Medicine	3 hours
RET	6700	Cardiac Rehabilitation and Prevention	3 hours

Group B: Electives 12 Semester Hours

PCB	6746	Organismal Physiology	4 hours
RET	5937	Special Topics: Exercise Physiology	3 hours
RET	5937	Special Topics: Research Seminar	2 hours
Elective to be selected with advisor's consent			3 hours

Total Minimum Semester Hours Required: 40

b. Specialization in Medical Laboratory Sciences 24-26 Semester Hours

Advanced professional education in Medical Laboratory Sciences is designed for the credentialed medical technologist, generalist, or specialist. Emphasis in Immunohematology is offered in cooperation with the Central Florida Blood Bank. Students desiring advanced course work in one of the other clinical laboratory specialties may select, with the approval of the faculty advisor, courses from the lists offered in Groups A and B in order to enhance and broaden their career objectives. Following satisfactory completion of course work, each student must pass a comprehensive examination and complete a thesis or research project. Prerequisite courses in immunology and statistics are required for admission.

Students in the Medical Laboratory Sciences Specialization may select, with the consent of the advisor, HSA 5198, Information Systems and Computer Applications in Medicine (3 hours) instead of PHC 6000, Epidemiology (3 hours) in the core courses.

Students must select a minimum of 12 semester hours from Group A and 12 hours from Group B, except for students in the Immunohematology emphasis who must select a minimum of 14 hours from Group B.

GROUP A: Medical Laboratory Sciences Courses			12 Semester Hours
MLS	6940	Advanced Clinical Practicum I	3 hours
MLS	6941	Advanced Clinical Practicum II	3 hours
MLS	6942	Advanced Clinical Practicum III	3 hours
MLS	6943	Advanced Clinical Practicum IV	3 hours
MLS	6340	Advanced Hemostasis	3 hours
MLS	5512	Clinical Immunology	3 hours
GROUP B: Electives			12-14 Semester Hours
HSC	6247	Health Science Education	3 hours
HSC	6306	Health Science Program Development and Operation	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EME	5202	Media and Methods in Teaching	3 hours
ESE	6218	Curriculum Writing	3 hours
EVT	5315	Applied Clinical Teaching Techniques	3 hours
EVT	5685	Competency Based Vocational Education	3 hours
ACG	5005	Financial Accounting	3 hours
FIN	5405	Financial Concepts	3 hours
MAN	5051	Management Concepts	2 hours
MAR	5055	Marketing Concepts	3 hours
MCB	5505C	Virology	3 hours
PCB	6235C	Immunochemistry	3 hours
APB	5581	Applied Microbiology	3 hours
Total Minimum Semester Hours Required:			39
With emphasis in Immunohematology:			41

MOLECULAR BIOLOGY AND MICROBIOLOGY

R. N. Gennaro, Ph.D. Chair and Graduate Program Coordinator
Office: BIO 330, Phone: (407) 823-5932

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 semester hours of undergraduate study or a score of at least 1000 on the combined quantitative-verbal sections of the Graduate Record Exam (GRE). Additionally, the department requires three letters of recommendation plus a written statement of past experience and research, area of interest, and immediate and long-range goals. Personal interviews are helpful but not required.

The department requires international students and students whose native language is not English to have a minimum TOEFL score of 550.

Applicants who fail to meet either the minimum program GPA or GRE requirement may occasionally be accepted if there is other convincing evidence of potential for high

achievement and success. Applicants failing to satisfy minimum program criteria should submit a GRE Subject (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 molecular biology or microbiology but are expected to have the equivalent of 16 semester hours credit in biological sciences including a course in general microbiology, plus one year of organic chemistry, one year of physics, basic university mathematics and statistics, and laboratory skills equivalent to the minimum required of our own undergraduates. Minor deficiencies may be remedied after acceptance by enrollment at the first opportunity in an appropriate course.

Examinations

A comprehensive examination is required of all students in the M.S. program. The comprehensive exam must be taken no later than the fourth week of that semester after the one in which the student completes all course work in the program of study. If a student fails the comprehensive examination, a minimum of four weeks must elapse before re-examination. The comprehensive exam may be taken a maximum of two times. In addition, an oral thesis defense is required. A minimum of four weeks must elapse between the comprehensive and thesis defense examinations.

Master of Science 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

APB	5236	Applied Microbiology	3 cr (3,0)
MCB	6407C	Laboratory Methods for Molecular Biology	5 cr (3,4)
MCB	5205	Infectious Processes	3 cr (3,0)
MCB	5505C	Virology	3 cr (2,3)
MCB	6417C	Microbial Metabolism	3 cr (3,1)
PCB	5235	Immunopathology	3 cr (3,0)
PCB	5235L	Immunopathology Laboratory	2 cr (0,4)
PCB	5806	Endocrinology	3 cr (3,0)
PCB	6746C	Organismal Physiology	4 cr (3,3)
ZOO	5745L	Essentials of Neuroanatomy	4 cr (3,2)
MCB	6971	Thesis	1-6 cr

SUMMARY OF M.S. DEGREE REQUIREMENTS

ADMISSION

1. 3.0 G.P.A. last 60 semester hours or 1000 on GRE (quant. + verbal).
2. Three letters of recommendation.
3. TOEFL of 550.
4. 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 our undergraduate.

EXAMINATION

1. Comprehensive covering all course work in program of study.
2. 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 (1/2 6000 level ect.).

PUBLIC ADMINISTRATION

Peter W. Colby Graduate Program Coordinator
Office: PH 102, Phone (407) 823-5365

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 semester hours of undergraduate study or a total score of 1000 or higher on the verbal-quantitative sections of the GRE or a previous graduate degree. 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. Individuals whose native language is other than English are required to have a minimum TOEFL score of 550.

Program in Public Administration

The Department of Public Administration's Master of Public Administration (M.P.A.) degree program provides opportunities for students to prepare for employment or advance their careers as public administrators. Our intention is to produce graduates equipped with the public management skills and analytic techniques needed for successful careers in government, non-profit, and closely-related business fields.

Master of Public Administration Degree Requirements

The M.P.A. Program consists of 36-42 hours. Each student completes a core of eight courses (24 hours), an advanced curriculum of three courses (9 hours) selected in consultation with the advisor, and a capstone experience equivalent to one course (3 hours). Those students without practical administrative experience in the public sector must complete an internship (3 hours). Finally, a research report option is available for students wishing to complete a more substantial research project than might be accommodated in the other courses.

MINIMUM CORE REQUIREMENTS (24 hours)

PAD	6053	Public Administrators in the Governance Process
PAD	6XXX	Public Administrators in the Policy Process
PAD	6700	Analytic Techniques for Public Administrators I
PAD	6701	Analytic Techniques for Public Administrators II
PAD	6037	Public Organization Management
PAD	6227	Public Budgeting and Financial Management
PAD	6417	Human Resource Management
PAD	6335	Strategic Planning and Management

ADVANCED CURRICULUM (9 hours)

An advanced curriculum of at least three courses that concentrate on a specific area germane to the practice of public administration may be taken within the Department of Public Administration or from other departments. Those elective courses offered within the Department will provide an emphasis on state and local government; however, other emphases may be developed in consultation with the advisor.

CAPSTONE EXPERIENCE (3 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 are encouraged to complete this requirement through enrollment in PAD XXXX Advanced Concepts and Applications in Public Administration. However, where that is not possible, students may complete this requirement through completion of a comprehensive written exam covering the core courses in the program and the completion of one additional elective course (3 hours).

INTERNSHIP (3 hours)

The internship, required of students without experience in a public sector administrative position, will provide the student with the opportunity to apply theory and analytic techniques to a real world situation. The student will be required to submit a summary and critique paper on the experience to the department's internship coordinator at the end of the assignment.

RESEARCH REPORT (6 hours)

Six semester hours of credit may be earned by completing an independent investigatory research report which results in a report acceptable to the department's graduate committee. Three of the six hours credit for the research report may substitute for three hours of the advanced curriculum requirement. This option is available only by permission of the graduate program coordinator.

TOTAL HOURS (36-42)

Basic Requirements (Core, Advanced Curriculum, Capstone Experience)	36 hours
Basic Requirements plus Internship	39 hours
Basic Requirements plus Research Report	39 hours
Basic Requirements plus Internship plus Research Report	42 hours

MASTER OF SOCIAL WORK (M.S.W.) in CLINICAL SOCIAL WORK PRACTICE

Kenneth J. Kazmerski, D.S.W. Chair and Graduate Coordinator
Office: TR 42 Phone (407) 823-2114

The master degree program in social work (M.S.W.) is focused on the study of rehabilitative and preventive interventions aimed at **reducing the impact of social problems on families and individuals**. This advanced degree in social work prepares students for licensed clinical practice in Florida.

The UCF program in CLINICAL SOCIAL WORK PRACTICE prepares students for social work generalist and clinical specialist practice functions, particularly in urban settings. "**Generalist Practice Functions**" encompass (a) assessing people and resource systems, (b) providing services and resources to people in need, (c) obtaining services and resources for people in need, and (d) improving services and resources for people in need. "**Clinical Specialist Practice Functions**" consist of (a) resolving client problems through individual, family, and group therapies, and (b) preventing social problems.

Elective courses in the MSW Program may be offered in the Fall and Spring Semesters, 1992-93. The first entering class will not be admitted until Fall, 1993.

Admission Policy

Students begin coursework in Social Work in the **Fall semester only**. Potential students must make application to the Graduate School of the University of Central Florida and take the GRE test. UCF requires the following of all applicants to the MSW program:

- Bachelor degree from an accredited institution.
- Good standing with institution last attended.
- Either a 3.0 or better Grade Point Average (GPA) on a 4.0 scale for the last 60 semester credit hours of college studies **or** a combined score of at least 1000 on the required GRE.
- One official transcript of all undergraduate and graduate course work attempted and/or completed.
- Two references, one academic and one employment. If an employment reference is not available, then a personal reference may be submitted in support of graduate study.
- One college level course in biology, psychology, and sociology.
- A broad liberal arts foundation, preferably with course content in biology, psychology, sociology, economics, political science, and computer science.
- A medical history report on the UCF health form.
- A written statement describing past work experience, areas of social work interest, and immediate and long range professional goals. The statement also should include information about personal qualifications for social work practice, such as 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 adherence to the social work code of ethics.

A limited number of *exceptions* to the minimum GRE/GPA requirements can be made for students. Exceptions can be made on the basis of:

- 1) Substantial or exceptional experience in social work.
- 2) Diversification of the student population.

Advanced Standing

If other qualifications are met, applicants with a **Bachelor of Social Work degree** from an accredited CSWE program may be admitted to the **Advanced Standing Program**. The Department of Social Work will review the applicant's transcript to determine eligibility and the number of course credit hours that will be waived from the core curriculum. A maximum of 30 credit hours can be waived for an applicant with a B.S.W. degree.

CURRICULUM (Proposed course levels and titles)

PREREQUISITES

Introductory college-level courses or equivalents are required before admission into the program.

Biology
Psychology
Sociology

9 semester hours

CORE: GENERALIST SOCIAL WORK PRACTICE

30 semester hours

The core curriculum may be taken in a B.S.W. degree program or as the first 30 hours of the M.S.W. program.

SOW	5XXX	Social Work Practice I: Generalist Practice	3 hours
SOW	5XXX	Social Work Practice II: Interventions	3 hours
SOW	5XXX	Human Behavior and Social Environment I: Individuals	3 hours
SOW	5XXX	Human Behavior and Social Environment II: Social Systems	3 hours
SOW	5XXX	Social Work Research	3 hours
SOW	5XXX	Evaluating Social Work	3 hours
SOW	5XXX	Social Welfare Policies & Services	3 hours
SOW	5XXX	Client Populations	3 hours
SOW	5XXX	Field Education I: Generalist Practice (224 clock hours)	3 hours
SOW	5XXX	Field Education II: Interventions (224 clock hours)	3 hours

ADVANCED: CLINICAL SPECIALIST

30 semester hours

SOW	6XXX	Clinical Practice with Individuals	3 hours
SOW	6XXX	Clinical Practice with Groups	3 hours
SOW	6XXX	Clinical Practice with Families	3 hours
SOW	6XXX	Psychosocial Pathology: An Urban Perspective	3 hours
SOW	6XXX	Urban Problems and Policies	2 hours
SOW	6XXX	Research Project: Clinical Practice in Urban Setting	2 hours
SOW	6XXX	Field Education III: Clinical Practice—Individuals & Families (304 clock hours)	4 hours
SOW	6XXX	Field Education IV: Clinical Practice-Groups (304 clock hours)	4 hours
		Practice Elective	3 hours
		Practice or General Elective	3 hours

Total credit hours = 60.

For course descriptions, contact the Department.

College of Health and Public Affairs Courses

APB 5236 Applied Microbiology

3 cr (3,0)

PR: MCB 3013C or C.I. Biochemistry of industrial processes including: economics, screening, scale up, quality control and applied genetics.

HSA 5198 Information Systems and Computer Applications in Medicine

3 cr (3,0)

PR: C.I. Overview of health informations systems with an emphasis on computer applications. Discussion of software and hardware requirements.

HSA 6107 Health Care Organization and Management I

3 cr (3,0)

Study of health care organizations, including modern management, organizational structure, systems control, human performances, planning, and leadership.

HSA 6108 Health Care Organization and Management II

3 cr (3,0)

PR: HSA 6107, HSA 5148, HSC 6911. Emphasis on planning, development, marketing approaches, and problem solving using computer methods.

HSA 6815 Practicum in Health Care Management

2-6 cr (0,20)

PR: Graduate status or C.I. Supervised practicum in health care institution management.

HSC 6245 Community Health Education

3 cr (3,0)

Development and evaluation of community health education programs within voluntary health organizations. HMOs, hospitals, and academic institutions.

HSC 6247 Health Science Curriculum Development

3 cr (3,0)

PR: Graduate status or C.I. Developing an instructional plan for Health Science curriculum including goal and task analysis, performance objectives, varied learning experiences and student evaluation.

HSC 6306 Organization and Management of Health Science Programs

3 cr (3,0)

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 6555 Principles and Applications of Medicine

3 cr (3,0)

PR: HSC 4550 or comparable course. The study of medical principles and conditions and their applications to health management and health education settings.

HSC 6556 Current Concepts in Pathophysiology Mechanisms

3 cr (3,0)

PR: HSC 4550 or equivalent, Human Anatomy and Physiology or C.I. A study of pathophysiologic mechanisms in causation and evolution of various disease states with special emphasis on recent work.

HSC 6559 Prevention of Cardiovascular Disease

3 cr (3,0)

Current methods of prevention and management of major cardiovascular disturbances. Diagnostic measures, intervention techniques for prevention, and rehabilitation and management methods.

HSC 6568 Issues in Geriatric Health Care

3 cr (3,0)

Identification of the health care needs of the elderly and the services required to meet them. Analysis of the current issues, problems, and trends in geriatric health.

HSC 6575 Principles of Preventive Medicine

3 cr (3,0)

Total concept of health care including methods of screening, diagnosis, treatment, rehabilitation, and promotion of health in diverse populations.

HSC 6636 Issues and Trends in the Health Professions

3 cr (3,0)

Exploration of current status, issues, problems, and future trends in the practice and education of health professions.

HSC 6815 Practicum in Health Science Education

2-6 cr (0,20)

PR: Graduate status or C.I. Supervised practicum in academic, clinical, or community instructional program.

HSC 6909 Research Report

3 cr

HSC 6911 Scientific Inquiry in the Health Professions

3 cr (3,0)

PR: STA 2014 or comparable course. The course will cover research design and evaluation, theory building, and biostatistics.

HUN 5937 Nutrition and Exercise Physiology

3 cr (3,0)

This course correlates human nutrition with exercise physiology. Nutritional concepts are related to human performance and fitness.

LIN 5705 Psycholinguistics

3 cr (3,0)

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.

MCB 6407C Laboratory Methods for Molecular Biology

5 cr (3,4)

PR: PCB 3023 or MCB 4404. Experimental techniques and design in laboratory biological research.

MCB 5205 Infectious Processes

3 cr (3,0)

PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.

MCB 5505C Virology

3 cr (2,3)

PR: MCB 3013C and BCH 4054. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification.

MCB 6417C Microbial Metabolism

3 cr (3,1)

PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation and synthesis.

MCB 6971 Thesis

1-6 cr

MLS 5512 Clinical Immunology

3 cr (3,0)

PR: PCB 3233, MLS 4511, or C.I. Advanced theory and application of immunologic diagnostic testing stressing the utilization of monoclonal technology.

MLS 6340 Advanced Hemostasis

3 cr (3,0)

PR: MLS 4334C or C.I. Examination of current theories and practice and the relationship to pathophysiologic processes in hemostasis.

MLS 6940 Advanced Clinical Practicum I

3 cr (2,15)

PR: C.I. Advanced clinical experience related to current practices and trends in one of the following areas of clinical laboratory technology: immunohematology; hematology; clinical chemistry; immunopathology; clinical microbiology; electron microscopy or toxicology.

MLS 6941 Advanced Clinical Practicum II

3 cr (2,15)

PR: C.I. Advanced study in one of the clinical laboratory areas listed in MLS 6890.

MLS 6942 Advanced Clinical Practicum III

3 cr (2,15)

PR: C.I. Advanced study in one of the clinical laboratory areas listed in MLS 6890.

MLS 6943 Advanced Clinical Practicum IV

3 cr (2,15)

PR: C.I. Advanced study in one of the clinical laboratory areas listed in MLS 6890.

PAD 5041 Ethics and Values in Public Administration

3 cr (3,0)

Issues of ethics in the public sector—the basis for public concern, past practice, present patterns of response; individual/social aspects of ethical behavior.

PAD 5336 Introduction to Urban Planning

3 cr (3,0)

PR: C.I. Issues of urbanization, regional development, land use and comprehensive planning, environmental planning, and social planning.

PAD 5337 Urban Design

3 cr (3,0)

PR: C.I. Planning techniques such as planned unit developments, capital improvements planning, and growth management, and planning methods including needs assessment and graphic design.

PAD 5338 Land Use and Planning Law

3 cr (3,0)

Review of national and local aspects of the legal underpinnings of urban planning aspects such as zoning, growth management and environmental regulation.

PAD 5424 Labor Relations in the Public Sector

3 cr (3,0)

Current trends and developments in employment relations in the public sector, especially employee organization, negotiations, and the collective bargaining process.

PAD 5425 Dispute Resolution in the Public Sector	3 cr (3,0)
An examination of the skills needed to resolve disputes in the public sector through facilitation, mediation, and other alternative methods.	
PAD 5806 Local Government Operations	3 cr (3,0)
Operational functions of municipal and county governments and the role of the chief executive officer.	
PAD 5807 Administrative Practice in the Public Sector	3 cr (3,0)
Application of various theoretical concepts to the real world of public administration. Policy formulation and execution is examined through the case study model.	
PAD 6037 Public Organization Management	3 cr (3,0)
Structure, functioning, performance of public organizations, and behavior of individuals and groups, application for public management.	
PAD 6053 Principles of Public Administration	3 cr (3,0)
Graduate level survey course directed toward basic concepts and theoretical approaches in the literature.	
PAD 6227 Public Budgeting	3 cr (3,0)
Budgets as planning programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS and incrementalism.	
PAD 6307 Policy Implementation	3 cr (3,0)
Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.	
PAD 6327 Public Program Evaluation Techniques	3 cr (3,0)
Techniques and skills utilized in the evaluation of public programs.	
PAD 6335 Strategic Planning and Management	3 cr (3,0)
PR: C.I. An examination and analysis of planning, goal setting and policy development, and strategic management in public sector organizations.	
PAD 6417 Human Resource Management	3 cr (3,0)
Administrator as manager and motivator of public employees with particular emphasis on organizational behavior and contemporary public service legislation.	
PAD 6700 Analytic Techniques for Public Administration I	4 cr (3,1)
Statistical methodology and use of computers as a tool for decision making in the public sector.	
PAD 6701 Analytic Techniques for Public Administration II	4 cr (3,1)
PR: Completion of PAD 6700. Applied analytical tools for administrators in the public sector. Practical use of computers in policy and decision making.	
PAD 6716 MIS for Public Managers	3 cr (3,0)
PR: C.I. Use of systems concept and computers in contemporary public sector management information systems.	
PAD 6908 Directed Independent Studies	Variable Credit 1-7
PAD 6918 Directed Research	Variable Credit 1-7
PAD 6934 Special Issues in Public Administration	3 cr (3,0)
Substantive and theoretical issues confronting the broad spectrum of contemporary public administration. May be repeated for credit.	
PAD 6946 Internship	3 cr (3,0)
PR: C.I.	
PCB 5235 Immunopathology	3 cr (3,0)
PR: 3233. In-depth overview of diseases due to deficiencies or over-reactivity of the immune system.	
PCB 5806 Endocrinology	3 cr (3,0)
PR: PCB 4723 and BCH 4053 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine system.	

- PCB 6746C Organismal Physiology** 4 cr (3,3)
PR: PCB 3023 or C.I. Modern experimental methods of detailed study of specific phases of the physiology of higher vertebrates.
- PET 5355 Exercise Physiology and Health** 3 cr (3,0)
In-depth study of adaptations of cardiovascular and respiratory systems during varying degrees of exercise.
- PHC 6000 Epidemiology** 3 cr (3,0)
PR: HSC 6911 or equivalent. A study of the distribution and determination of diseases and injuries in human populations.
- PHC 6146 Health Planning and Policy** 3 cr (3,0)
Review of the determinants of the revolution of the health care system in the U.S.; 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 Health Care Finance** 3 cr (3,0)
The identification of resources available to health care institutions, allocation of resources, and control of resource expenditures.
- PHC 6300 Environmental Health** 3 cr (3,0)
Recognition and evaluation of control problems arising from environmental contamination, which includes safe water supply, waste disposal, and food resources.
- PHC 6411 Health and Society** 3 cr (3,0)
Understanding health and illness as defined by patients, providers, and other persons in the social system.
- PHC 6420 Case Studies in Health Law** 3 cr (3,0)
Health law including patient care, liability, malpractice, workmen's compensation, and legal responsibilities of health personnel.
- RET 5910 Research Methods in Cardiopulmonary Physiology** 3 cr (3,0)
Introduction to methods used in scientific and medical research in cardiopulmonary physiology. Literature review, experimentation, and analysis of data.
- RET 6555 Cardiac Rehabilitation** 3 cr (3,0)
PR: HSC 6566. Lecture course emphasizing the principles underlying the formulation and implementation of a comprehensive cardiac rehabilitation and prevention program.
- SPA 5005 Survey of Communicative Disorders** 3 cr (3,0)
PR: C.I. A survey of speech, language, and hearing disorders for habilitative personnel and other interested professionals.
- SPA 5120 Physiological Acoustics** 4 cr (4,3)
PR: SPA 4032, Graduate status or C.I. Lectures, readings and experiments pertaining to the subjective reception of sound.
- SPA 5225 Fluency Disorders** 3 cr (3,0)
PR: Graduate status or C.I. Identification and evaluation of disorders of rhythm. Emphasis will be on methods of intervention in disorders of fluency.
- SPA 5225L Fluency Disorders Laboratory** 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.
- SPA 5307 Differential Diagnosis of Auditory Disorders** 3 cr (3,0)
PR: SPA 4032, Graduate status or C.I. Clinical techniques in pure tone speech, acoustic impedance and electrophysiologic response audiometry.
- SPA 5327 Aural Habilitation/Rehabilitation** 4 cr (4,0)
PR: Graduate status or C.I. Principles and procedures involved in speech and language acquisition, management, utilization of residual hearing, speech reading and the use of hearing aids.
- SPA 5553 Differential Diagnosis in Speech and Language** 3 cr (3,0)
PR: SPA 6204, SPA 6403, SPA 6211, SPA 5805. Administration and interpretation of evaluation techniques, including standardized tests, will be presented. Emphasis will be on those techniques which allow for differential diagnosis of speech and language disorders.

- SPA 5553L Differential Diagnosis in Speech and Language Laboratory** 1 cr (0,4)
PR: 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 5554 Therapeutic Communication** 3 cr (3,0)
PR: Graduate status or C.I. Practical interviewing and counseling in the area of Communicative Disorders. Emphasis is on facilitating clinician-client interactions.
- SPA 5600 Administration and Management of Communicative Disorders Programs** 3 cr (3,0)
PR: SPA 3002. Methods and techniques for organization and administration of Speech/Language and Hearing Disorders in public school, hospital, rehabilitation center and private practice facilities.
- SPA 5805 Research in Communicative Disorders** 3 cr (3,0)
PR: STA 4163, Graduate status or C.I. This course is designed to introduce the student to empirical research in the area of communication disorders. Emphasis is on hypothesis testing, methodology, analysis and interpretation of results.
- SPA 6132 Measurements in Speech Science** 3 cr (1,4)
PR: Graduate status or C.I. The application of instrumentation to research in normal speech and language behaviors. Measurements include use of electronic instruments, such as the oscilloscope.
- SPA 6204 Advanced Studies in Communicative Disorders: Articulation** 3 cr (3,0)
PR: SPA 3112, SPA 3112L, SPA 4201. Advanced theory, diagnostic techniques and therapeutic procedures for articulation disorders. May be repeated for credit.
- SPA 6204L Advanced Studies in Communicative Disorders: Articulation Laboratory** 1 cr (0,2)
PR: SPA 3112, SPA 3112L, SPA 4201. Practical application of clinical skills in articulation disorders. May be repeated for credit.
- SPA 6211 Voice Disorders** 3 cr (3,0)
PR: SPA 3101. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate and other disorders of the vocal mechanisms.
- SPA 6211L Voice Disorders Laboratory** 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.
- SPA 6308 Auditory Evaluation and Assessment Procedures for Special Populations** 4 cr (4,0)
PR: Graduate status or C.I. Audiometric testing and functional communicative assessment procedures for geriatric, pediatric, and other special populations.
- SPA 6345 Amplification** 4 cr (4,0)
PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electro-acoustic measurements, coupling techniques, and orientation and counseling.
- SPA 6353 Hearing Conservation** 4 cr (4,0)
PR: SPA 4032, SPA 5120. Industrial audiometry, community noise abatement and public school hearing conservation.
- SPA 6403 Advanced Studies in Communicative Disorders: Language** 4 cr (4,0)
PR: Graduate status or C.I. Presentation of the syntactic, semantic and pragmatic nature of children's language disorders. Emphasis will be on techniques and methods of diagnosis and intervention with children from birth through adolescence. May be repeated for credit.
- SPA 6410 Language Problems in Adults** 4 cr (4,0)
PR: SPA 4251, Graduate Status, or C.I. A study of the language disorders in adults associated with neurological problems, brain injury, systemic disease, and aging.
- SPA 6505 Clinical Practicum in Speech Pathology-Language** 3 cr (0,6)
PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated with change of content.
- SPA 6506 Clinical Practicum in Audiology** 3 cr (0,6)
PR: SPA 4032. Advanced clinical practice in communicative disorders. May be repeated with change of content.
- SPA 6908* Directed Independent Studies** 1-6 cr

SPA 6918* Directed Independent Research 1-6 cr

SPA 6938* Special Topics/Seminars - May be repeated for credit. 1-6 cr

SPA 6946* Internship, Practicums, Clinical Practice 1-6 cr

SPA 6971* Thesis 1-6 cr

HSC 6971* Thesis 1-6 cr

ZOO 5745C Essentials of Neuroanatomy 4 cr (3,2)

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.

*Must present at registration an authorization form which is obtained from the department office.

SPA 6132 Measurement in Speech Sciences
PR: Graduate status or C.I. The application of instrumentation to research in normal speech and language behaviors. Measurements include use of electronic instruments, such as the oscilloscope.

SPA 6204 Advanced Studies in Communicative Disorders: Articulation
PR: SPA 6112, SPA 6114, SPA 6201. Advanced topics, diagnostic techniques and procedures for articulation disorders. May be repeated for credit.

SPA 6204L Advanced Studies in Communicative Disorders: Articulation Laboratory
PR: SPA 6112, SPA 6114, SPA 6201. Practical application of clinical skills in articulation disorders. May be repeated for credit.

SPA 6211 Voice Disorders
PR: SPA 6101. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate and other disorders of the vocal mechanism.

SPA 6211L Voice Disorders Laboratory
PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.

SPA 6208 Auditory Evaluation and Assessment Procedures for Special Populations
PR: Graduate status or C.I. Audiotape testing and functional communicative assessment procedures for hearing, hearing, and other special populations.

SPA 6208 Amplification
PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electro-acoustic measures, fitting, coupling techniques, and orientation and counseling.

SPA 6222 Hearing Conservation
PR: SPA 6032, SPA 6120. Industrial audiology, community noise abatement and public school hearing conservation.

SPA 6222 Advanced Studies in Communicative Disorders: Language
PR: Graduate status or C.I. Presentation of the syntactic, semantic and pragmatic nature of children's language disorders. Emphasis will be on techniques and methods of diagnosis and intervention with children from birth through adolescence. May be repeated for credit.

SPA 6210 Language Problems in Adults
PR: SPA 6201. Graduate status or C.I. A study of the language disorders in adults associated with neurological problems, brain injury, systemic diseases, and aging.

SPA 6205 Clinical Practicum in Speech Pathology-Language
PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated with change of content.

SPA 6205 Clinical Practicum in Audiology
PR: SPA 6202. Advanced clinical practice in communicative disorders. May be repeated with change of content.

SPA 6918* Directed Independent Studies

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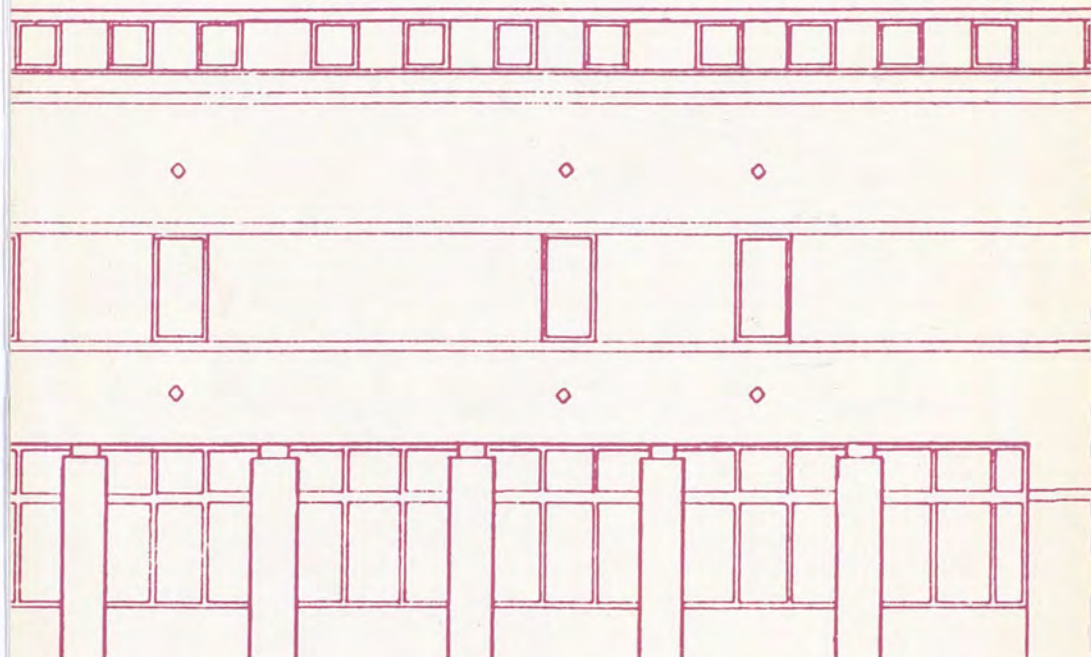
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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

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