

A large, stylized graphic in dark blue and black on a reddish-brown background. It depicts a person in silhouette, reaching upwards with one arm. A large, curved shape, resembling a comet or a stylized 'S', arches over the person's head. At the top of this arch is a four-pointed star. The text 'REACH FOR THE STARS' is written along the curve of the arch. The overall design is bold and modern.

1986-87

REACH FOR THE STARS

**GRADUATE
CATALOG**

UNIVERSITY OF CENTRAL FLORIDA

DEGREES OFFERED

COLLEGE OF ARTS AND SCIENCES

Master of Arts

Communication
English
History
Political Science
Sociology, Applied

Master of Science

Biological Sciences
Chemistry, Industrial
Computer Science
Mathematical Science
Microbiology
Physics
Psychology
Clinical
Industrial
Statistical Computing

Doctor of Philosophy

Computer Science

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

COLLEGE OF BUSINESS ADMINISTRATION

Master of Arts

Economics, Applied

Master of Science

Accounting

Master of Business

Administration (M.B.A.)

COLLEGE OF EDUCATION

Master of Arts and/or Master of Education

Administration & Supervision
Teacher Specialist
Counselor Education
Educational Media Specialist
Instructional Technology Specialization
Elementary Education
Art (Visual Arts) Education
Early Childhood Education
Gifted Education
Mathematics Education
Music Education
Reading Specialization
Exceptional Child

Physical Education

Secondary Education

Business-Vocational Education
English Language Arts Education
Gifted Education
Mathematics Education
Science Education
Social Science Education

Master of Science

School Psychology

Specialist in Education

Administration and Supervision
Curriculum and Instruction

Doctor of Education

Administration and Supervision
Curriculum and Instruction

COLLEGE OF ENGINEERING

Master of Science

Computer Integrated
Manufacturing
Computer Systems
Construction
Electrical Systems
& Sciences
Energy Systems
Engineering Administration
Engineering Systems Analysis
Environmental Sciences
Mechanical Systems
Operations Research
Simulation Systems
Structures & Foundations
Transportation Systems

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

Master of Science in Environmental Systems Management (M.S.E.S.M.)

Master of Civil Engineering (M.C.E.)

COLLEGE OF HEALTH

Master of Arts

Communicative Disorders

Master of Science

Health Sciences

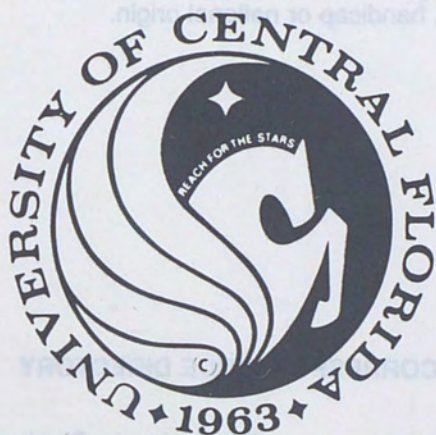
GRADUATE CATALOG

UNIVERSITY

OF

CENTRAL FLORIDA

1986-87



Orlando, Florida
Volume V

UNIVERSITY OF CENTRAL FLORIDA

A Member Institution
of the
State University System of Florida
Orlando, Florida

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

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

CORRESPONDENCE DIRECTORY

Address Correspondence

University of Central Florida
Orlando, Florida 32816

Admission to Graduate Studies

Gene Kearns
Graduate Admissions Office
Phone: (305) 275-2766

Housing

Manager, Student Housing
Phone: (305) 275-2171

Financial Aid/Out-of-State Tuition Assistance

Contact College Dean's Office

TABLE OF CONTENTS

	Page
ADMINISTRATION AND STAFF	4
THE UNIVERSITY	6
ACADEMIC CALENDAR	12
CAMPUS AND VICINITY MAPS	14
ADMISSION	17
FEE INFORMATION	25
OFFICE OF GRADUATE STUDIES	29
UNIVERSITY GRADUATE REGULATIONS	31
STUDENT SERVICES	39
PROGRAM AND COURSE DESCRIPTIONS	43
COLLEGE OF ARTS AND SCIENCES	45
COLLEGE OF BUSINESS ADMINISTRATION	93
COLLEGE OF EDUCATION	107
COLLEGE OF ENGINEERING	153
COLLEGE OF HEALTH	185
INDEX	196

Recent program changes may not be reflected in this catalog. Students should check with the appropriate graduate program coordinator for current information.

To acquaint the student with the programs of study and the cost of attending the university, this public document was promulgated at an annual cost of \$1.07 per copy.

ADMINISTRATION AND STAFF

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Assistant Director.....	Rusty Okoniewski
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Center for Research in Electro-Optics & Lasers.....	Louis M. Trefonas

CENTRAL FLORIDA RESEARCH PARK

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COLLEGES, GRADUATE PROGRAMS, AND DEPARTMENT CHAIRMEN

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History.....	Jerrell H. Shofner
Mathematics.....	Lokenath Debnath
Physics.....	William C. Oelfke
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Psychology.....	Richard D. Tucker
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Statistics.....	Linda C. Malone

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Marketing.....	TBA

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Mechanical Engineering and Aerospace Sciences (Acting).....	Stephen L. Rice
Engineering Technology.....	Richard G. Denning

College of Health

Dean.....	Ronald M. Gerugthy
Communicative Disorders.....	David Ratusnik
Health Sciences.....	Thomas S. Mendenhall

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. Ph.D. programs are available in computer science, education and engineering.

INSTITUTIONAL PHILOSOPHY

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

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

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

ACCREDITATION

The graduate programs of the University are accredited by the Southern Association of Colleges and Schools, the official regional accrediting agency for educational institutions in the South.

In addition to the regional accreditation agencies, there are a number of scientific, professional, and academic bodies conferring accreditation in specific disciplines. The College of Business Administration is accredited by the American Assembly of Collegiate Schools of Business (AACSB). All teacher education programs are fully accredited by the Florida State Department of Education. UCF is listed with an "A" rating in the Report of Credit Given by Educational Institutions.

EAST CENTRAL FLORIDA AREA

UCF is located in the east central Florida region with a population estimated at 1.7 million. The area is endowed with a rich heritage of cultural, educational, industrial, and recreational activities. Cultural activities include a symphony orchestra, civic theater, dinner theaters, art galleries, and museums. The beauty of the Orlando area is evidenced by its numerous parks and flower gardens. In addition to UCF, educational needs of the area are served through quality public school systems, public community colleges, and several privately supported colleges and schools. Recreational opportunities abound in the Orlando area.

THE CAMPUS

The campus of UCF, located 13 miles east of downtown Orlando, consists of 1227 acres of land in a scenic setting of pine, palm, cypress, cedar, and oak trees. Lake Claire, covering 40 acres, and Lake Lee, covering 14 acres, contribute to the natural beauty of the campus. Since campus construction began in 1966, more than 20 buildings have been built including the library, classroom buildings, laboratories, residence halls, and student facilities. The Creative School for Children was built with funds contributed by the Edyth Bush Charitable Foundation of Winter Park and the UCF Student Government. Recreational facilities include lighted tennis and handball courts, a flag football/soccer field, a swimming pool, a golf driving range with putting greens, volleyball courts, and a baseball field. The campus currently serves over 16,000 students.

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



UNIVERSITY LIBRARY

The University Library, now expanded to a facility of 200,200 square feet, provides materials and services to support the instructional and research needs of the University. Construction already underway on an expansion of the Library will effectively double the space available to faculty and students. The collection now numbers approximately 500,000 volumes, 315,000 microforms, 5,000 serial titles, 250,000 government documents, and 2,000 volumes in special collections. On-line access to OCLC and commercial databases is available. Special library services are provided for physically handicapped students. The Library is a depository for U.S. and Florida state documents.

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

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; 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. 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 Business Barometer of Central Florida. Department of Economics

The Business Barometer of Central Florida is a quarterly publication which reports on various economics data pertinent to the local business community. A generous grant from Sun Bank, N.A., aids the College of Business Administration in publishing *The Business Barometer*.

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 pen-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 content of the journal.

The Florida Review. Edited by Professor Patrick Rushin

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 our 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. Our only editorial standard is literary excellence.

Global Perspectives. Managing Editor, Dr. John C. DiPierro

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, Chairman 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, referenced 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 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.

Chartered in 1968, the UCF Foundation, Inc., is a non-profit, tax-exempt corporation receiving and disbursing private gifts for the betterment of the University as a whole. Its primary function is to assist the University financially in the student aid program, scholarships, and in institutional development.

Through the leadership of a 50-member Board of Directors, the Foundation encourages, solicits, receives, and administers gifts and bequests of property and funds for scientific, educational and charitable purposes aimed at the advancement of the University and its objectives.

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

TRAVELING SCHOLAR PROGRAM

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

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

FLORIDA SOLAR ENERGY CENTER

UCF provides administrative support to the Florida Solar Energy Center, one of the largest renewable energy research centers in the United States. Located on 10 acres at Cape Canaveral, FSEC was created by the Florida Legislature in 1974 to advance research, development and analysis of solar technology. The Center has a highly qualified, multidisciplinary professional staff and comprehensive facilities for research and testing of photovoltaic cells, low energy building designs, solar collectors, and domestic hot water systems. The facility also has extensive technology transfer facilities, including an energy library and an auditorium for energy workshops.

FSEC major programs include research into photovoltaics (solar-generated electricity), alternative water heating systems, ocean thermal energy conversion, energy-efficient building design, natural lighting and ventilation and other energy conservation techniques.

CENTRAL FLORIDA RESEARCH PARK

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

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

FINANCIAL AID OFFICE

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



CAMPUS AND GRADUATE SCHOOL CALENDAR

SUMMER TERMS 1986

	Term "C" 1986	Term "A" 1986	Term "B" 1986
APPLICATION DEADLINES			
For International Students	Jan. 31	Jan. 31	Mar. 18
For U.S. Postbaccalaureate Students	Mar. 28	Mar. 28	May 2
Readmission Applications	April 11	April 11	May 23
REGISTRATION by appointment*			
Classes begin	May 7	May 7	June 19
Last day for refund of fees	May 8	May 8	June 23
Last day of late registration, Add/Drop	May 13	May 13	June 25
Last day of late registration, Add/Drop	May 13	May 13	June 25
Only day to submit audit request	May 14	May 14	June 26
Last day to apply for graduation	May 21	May 21	June 27
Last day for removing TEMPORARY acceptance	June 5	June 5	July 21
Deadline for withdrawal	June 13	May 28	July 11
Last day to remove an "I"	July 16	July 16	July 16
End of classes and term; exams	Aug. 2	June 20	Aug. 2
Grades Due	Aug. 4	June 23	Aug. 4

GRADUATE STUDIES DEADLINES

Request for Dissertation Defense	June 23
Announcement of Dissertation/Thesis/Research Report Defense:	
At least one week before Defense	
Dissertation Defense Deadline	July 11
Request Thesis Defense	July 7
Dissertation draft to Library	June 27
Thesis/Research Report draft to Library	July 7
Deadline for Editorial Assistant's List	July 7
Thesis Defense Deadline	July 18
Final thesis/dissertation due in Library	Aug. 2

GRE—General Test Dates

Feb. 1, April 12 & June 7, 1986

GMAT Test Dates

Jan. 25, March 15 & June 21, 1986

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

Deadline for obtaining graduate status for Summer 1986 is May 28.

HOLIDAYS: Memorial Day — May 26, 1986 (University wide)

Independence Day — July 4, 1986 (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.

CALENDAR 1986

JUNE S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	JULY S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	AUGUST S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	SEPTEMBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
OCTOBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	NOVEMBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	DECEMBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	

CAMPUS AND GRADUATE SCHOOL CALENDAR

	FALL Semester 1986	SPRING Semester 1987	SUMMER Term "C" 1987
APPLICATION DEADLINES			
For International Students	May 5	Oct. 3	Jan. 30
For U.S. Postbaccalaureate Students	June 16	Nov. 14	Mar. 27
Readmission Applications	July 21	Dec. 12	April 10
REGISTRATION by appointment*			
Classes begin	Aug. 18-22	Jan. 2	May 6
Last day of late registration, Add/Drop	Aug. 25	Jan. 5	May 7
Last day for refund of fees	Aug. 26	Jan. 6	May 7
Last day to submit audit request	Aug. 29	Jan. 9	May 7
Only day to submit audit request	Aug. 29	Jan. 9	May 8
Last day to apply for graduation	Sept. 5	Jan. 16	May 20
Last day for removing TEMPORARY acceptance	Sept. 26	Feb. 2	June 4
Deadline for withdrawal	Oct. 17	Feb. 27	June 12
Last day to remove an "I"	Nov. 21	April 6	July 15
Classes end	Dec. 12	April 22	July 31
Final exams and Special Exams	Dec. 15-20	Apr. 23-29	July 31
End of Term and/or Commencement	Dec. 19	May 1	July 31
Grades Due	Dec. 22	May 2	Aug. 3
*If class meets first time Wed. or Thurs. night, Add/Drop can be adjusted.			
GRADUATE STUDIES DEADLINES			
Request for Dissertation Defense	Nov. 3	March 16	June 22
Announcement of Dissertation/Thesis/Research Report Defense:			
At least one week before Defense			
Dissertation Defense deadline	Nov. 21	April 1	July 10
Request Thesis Defense	Nov. 14	March 25	July 6
Thesis defense deadline	Dec. 1	April 8	July 17
Dissertation draft to Library	Nov. 7	March 18	June 26
Thesis/Research Report draft to Library	Nov. 14	March 25	July 6
Deadline for Editorial Assistant's List	Nov. 14	March 25	July 6
Final Dissertations, Theses, or Research Reports to Library	Dec. 12	April 22	July 31
GRE—General Test Dates (5 tests given during a year)			
Oct. 11 & Dec. 13, 1986			
Feb. 7, April 11 & June 6, 1987			
GMAT Test Dates (4 tests given during a year)			
Oct. 18, 1986			
Jan. 24, Mar. 21 & June 20, 1987			
Deadline for obtaining graduate status is the twenty-first day of the semester.			
Sept. 15			
Jan. 26			
May 28			

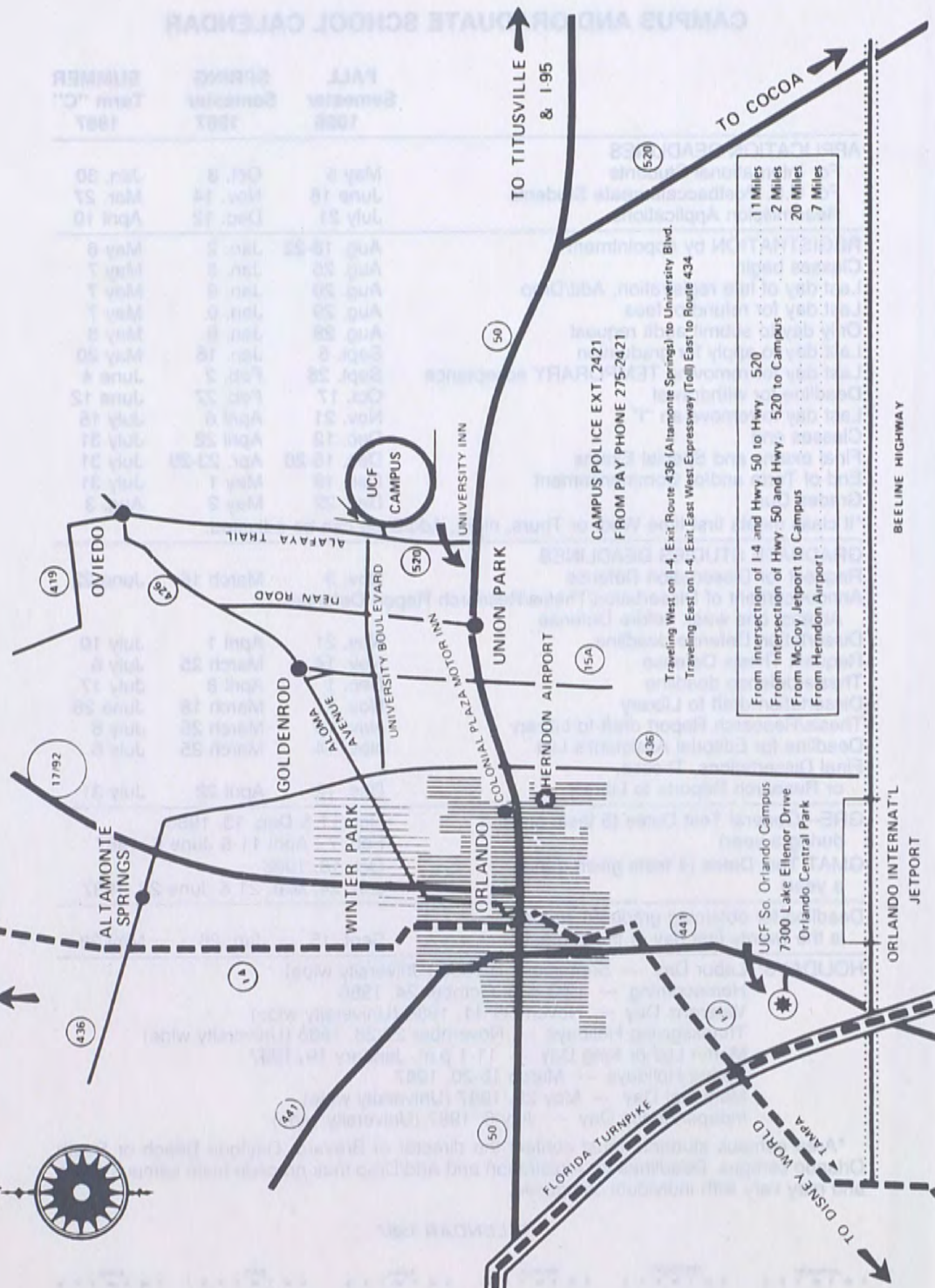
HOLIDAYS: Labor Day — September 1, 1986 (University wide)
 Homecoming — 12-3 p.m. October 24, 1986
 Veterans Day — November 11, 1986 (University wide)
 Thanksgiving Holidays — November 27-28, 1986 (University wide)
 Martin Luther King Day — 11-1 p.m. January 19, 1987
 Spring Holidays — March 16-20, 1987
 Memorial Day — May 25, 1987 (University wide)
 Independence Day — July 3, 1987 (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.

CALENDAR 1987

JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4	1 2	1 2 3 4 5 6
4 5 6 7 8 9 10	8 9 10 11 12 13 14	8 9 10 11 12 13 14	5 6 7 8 9 10 11	3 4 5 6 7 8 9	7 8 9 10 11 12 13
11 12 13 14 15 16 17	15 16 17 18 19 20 21	15 16 17 18 19 20 21	12 13 14 15 16 17 18	10 11 12 13 14 15 16	14 15 16 17 18 19 20
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25 26 27 28 29 30 31		29 30 31	26 27 28 29 30	24 25 26 27 28 29 30	28 29 30
				31	

TO SANFORD & DAYTONA



From Intersection of I-4 and Hwy. 50 to Hwy. 520	11 Miles
From Intersection of Hwy. 50 and Hwy. 520 to Campus	2 Miles
From McCoy Jetport to Campus	20 Miles
From Herndon Airport	7 Miles

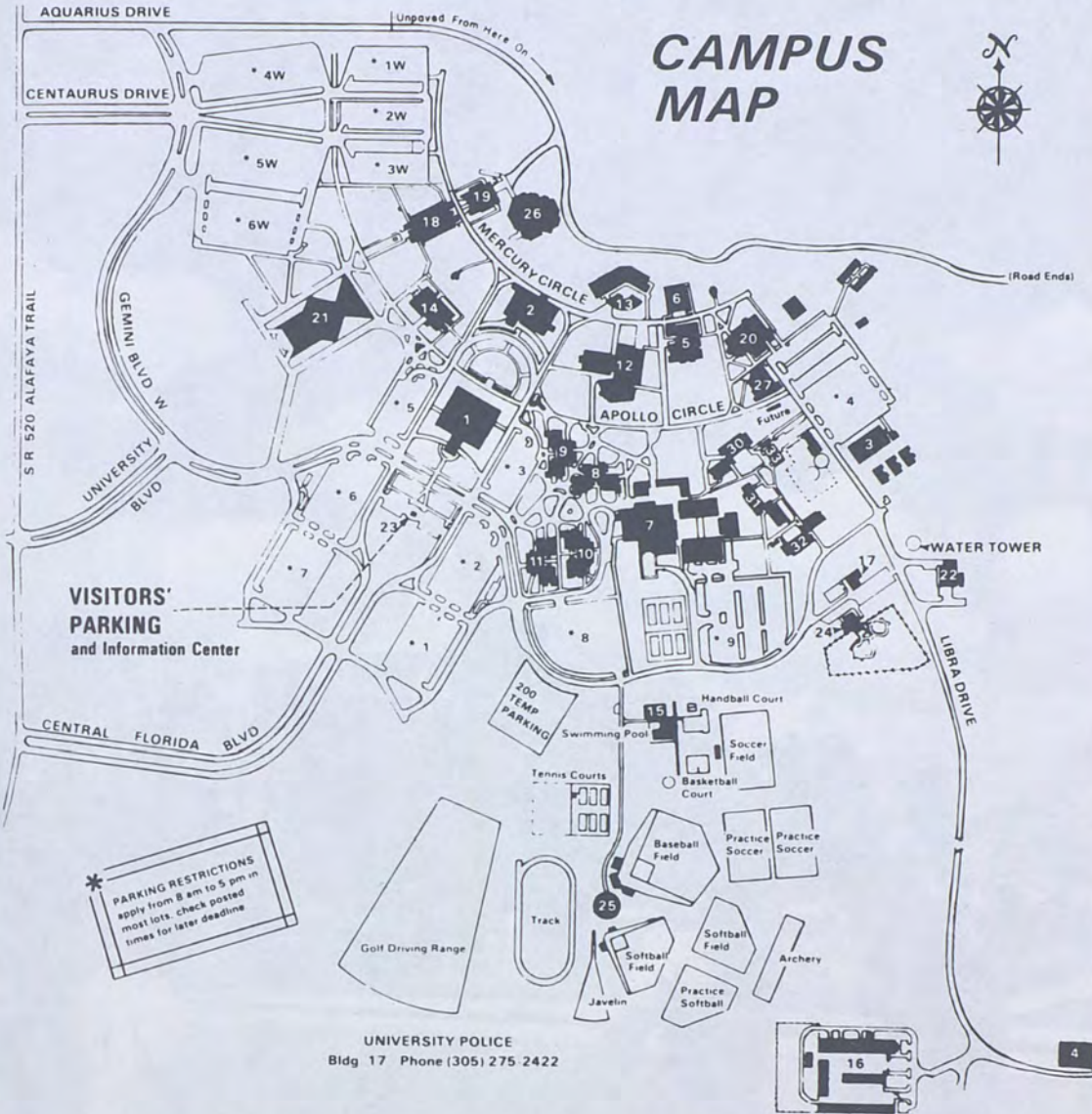
CAMPUS POLICE EXT. 2421
FROM PAY PHONE 275-2421

Traveling West on I-4, Exit Route 436 (Altamonte Springs) to University Blvd.
Traveling East on I-4, Exit East West Expressway (Toll) East to Route 434

ORLANDO INTERNAT'L
JETPORT

University of Central Florida

CAMPUS MAP



- 1 ADMINISTRATION BLDG
- 2 LIBRARY BLDG
- 3 UTILITY PLANT/HVAC
- 4 SEWAGE PLANT
- 5 CHEMISTRY BLDG
- 6 SCIENCE AUDITORIUM
- 7 STUDENT CENTER
- 8 RESIDENCE A
- 9 RESIDENCE B
- 10 RESIDENCE C
- 11 RESIDENCE D

- 12 ENGINEERING BLDG
- 13 COMPUTER CENTER
- 14 HOWARD PHILLIPS HALL
- 15 RECREATIONAL SERVICES BLDG.
- 16 PHYSICAL PLANT COMPLEX
- 17 CAMPUS POLICE BLDG
- 18 HUMANITIES & FINE ARTS BLDG
- 19 REHEARSAL HALL
- 20 BIOLOGICAL SCIENCES BLDG
- 21 EDUCATION COMPLEX & GYMNASIUM
- 22 CENTRAL RECEIVING/PRINT SHOP

- 23 VISITORS INFORMATION CENTER
- 24 CREATIVE SCHOOL FOR CHILDREN
- 25 PHYSICAL EDUCATION SUPPORT BLDG
- 26 STUDENT SERVICES BLDG
- 27 STUDENT HEALTH CENTER
- 28 FUTURE NEWSPAPER
- 30 RESIDENCE E
- 31 RESIDENCE F
- 32 RESIDENCE G
- 33 COMMONS BUILDING

PAO
Rev 1/82



ADMISSION TO THE UNIVERSITY AND GRADUATE STUDIES

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

ADMISSION PROCEDURE AND DOCUMENTS

APPLICATIONS

Applications for admission to the University for degree-seeking or non-degree seeking (postbaccalaureate) 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 here must file an application for admission to either the graduate degree program or for non-degree (postbaccalaureate) 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.

Unaccredited Colleges or Universities: Transfer applicants who otherwise meet all requirements, but who enter from a "regionally" unaccredited college or university, will be considered on an individual basis. Admission may be granted on a provisional, probationary and/or non-degree basis depending upon the applicant's record.

OFFICIAL TRANSCRIPTS

To be granted admission to UCF in either graduate or postbaccalaureate status, all applicants must have on file in the Registrar's Office official transcripts showing a baccalaureate degree and the grades for the last 60 semester hours of undergraduate work. Final acceptance 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 RECORD EXAMINATION (OR GMAT)

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 postbaccalaureate 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 their 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 three times a year on the UCF main campus. An individual should contact the UCF Counseling and Testing Center for registration dates and procedures.

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. At the present time, ETS will continue reporting pre-October 1985 GRE test scores as far back as 1970. There is no change in the reporting of GMAT scores; they are being reported for twenty years.

However, the established time limit of test scores carries with programs at UCF, as shown below:

Arts and Sciences

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

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

Education programs have no limit.

Engineering programs have no limit.

Health

Communicative Disorders	7-year limit
Health Sciences	7-year limit
Public Health	5-year limit

INTERNATIONAL STUDENTS

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

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	
Biological Sciences	550
Chemistry, Industrial	500
Communication	550
Computer Science	550
English	575
History	575
Mathematical Science	500
Microbiology	550
Physics	550
Political Science	500
Psychology	500
Public Administration	550
Sociology, Applied	500
Statistical Computing	500
College of Business Administration	575
College of Education	500
College of Engineering	550
College of Health	500

The Graduate Admissions Office of the University of Central Florida requires evaluations of international student documents. The evaluations must be done by the World Education Services, Inc. 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.

The address of the World Education Services is:

World Education Services, Inc.
P.O. Box 745
Old Chelsea Station
New York, New York 10011

RECORDS DEADLINE - Supporting Documents

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

RECORDS - Validity of Documents

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

MEDICAL HISTORY REPORT

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

REACTIVATION OF A STUDENT'S FILE

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

ADMISSION TO THE UNIVERSITY

ADMISSION PROCESS

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

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

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

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

READMISSION TO THE UNIVERSITY

A regularly admitted student who has not been registered during an academic term (other than summer), must make application for readmission through the Admissions Office approximately one month before classes begin for the new semester. (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 does not enroll in the University for a period of three consecutive semesters *including summer*. When a student applies for readmission, after having been out three or more semesters, the program will review the student's record to determine if he will be continued in graduate status or be reverted to postbaccalaureate status.
2. Graduation policy allows a student to fulfill degree requirements as listed in the UCF catalog in force during the student's most recent period of continuous attendance. Continuous attendance is interrupted when a student drops out of school for any term other than the summer term. Because students must occasionally interrupt their attendance for a brief period, a student will be considered to have interrupted his continuous attendance only if the interruption is for three or more consecutive terms including summer. Under these circumstances, a student will lose the option of fulfilling degree requirements under earlier catalogs.

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 Graduate Studies.

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 7:30 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 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 recommend denial or admittance on REGULAR or PROVISIONAL degree-seeking graduate status.

APPEALS PROCEDURE FOR REJECTED STUDENTS

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

ADMISSION CLASSIFICATIONS

Admission to graduate status can be in either of two categories: regular status or provisional status. (Postbaccalaureate status is considered nondegree-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 450 or higher as needed) or an equivalent score on an equivalent measure approved by the Board of Regents.

OR

a previous graduate degree and official GRE or GMAT score.

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

- (2) A student must be accepted by the program coordinator and the dean of the college offering the particular degree program he seeks. Requirements in addition to the minimums stated above may be specified by the individual degree programs.
- (3) 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 requires evaluation of international student documents. The evaluations must be done by World Education Services, Inc. The following programs require only document evaluation: Computer Science, English, Mathematical Science, Political Science and Health. All other departments require course-by-course evaluation. Information concerning the evaluation service can be obtained Office or by writing WES, P.O. Box 745, Old Chelsea Station, New York, NY 10011, USA.

GRADUATE STATUS—PROVISIONAL

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

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

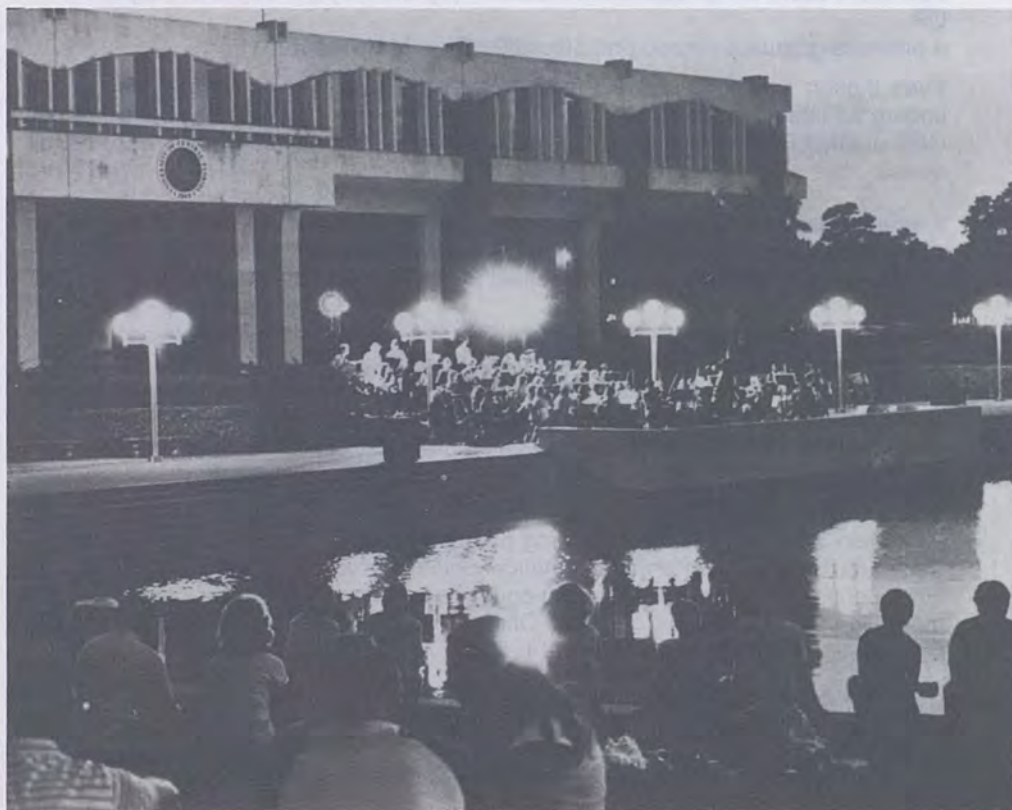
PROVISIONAL students may be admitted to REGULAR status following satisfactory completion of 9 semester hours and upon recommendation by the program coordinator and college dean, subject to approval by the Dean of Graduate Studies. If a student does not maintain a 3.0 GPA in his graduate program of study,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

POSTBACCALAUREATE STATUS

Postbaccalaureate status is considered to be non-degree seeking. A student is placed in this category for computer records when his application is received. If a student wishes to be degree-seeking, he 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.

A student may elect to remain in postbaccalaureate 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, postbaccalaureate students register the last day. Furthermore, not all departments accept postbaccalaureate students. For those departments which do accept postbaccalaureate 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 postbaccalaureate 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 him to the new program as a graduate student or change him to postbaccalaureate status, whichever is appropriate. Changes of majors for postbaccalaureate students are submitted by the college on a University change of major form.

DISMISSAL FROM THE GRADUATE PROGRAM

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

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

SECOND MASTER'S DEGREE

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

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

It should be noted that UCF awards a particular type of degree only once (e.g., a Master of Arts in Communication precludes an M.A. in any other college or department). However, a transfer student with a graduate degree may pursue the same type of degree at UCF.

FEE INFORMATION

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

Required fees are established by the Board of Regents and the Florida State Legislature and are subject to change without notice.

GENERAL FEES AND COSTS

Application Fee\$15.00
A nonrefundable fee is required with all applications for admission to the University.

Registration Fees

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

Fall and Spring Semesters, 1985-86	Resident	Non-Resident
Upper-Division Undergraduate Level Credits	\$32.36/hour	\$115.31/hour
Graduate Level Credits	47.74/hour	142.24/hour
Thesis and Dissertation Credits	52.15/hour	146.65/hour
Upper-Division Undergraduate Summer courses are:	18.50/hour	

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

Student Health Fee (not refundable)

Fall and Spring Semesters24.00
Summer Semester\$16.00

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

Athletic Fee—per semester (Fall and Spring semesters only)\$15.00

Assessed to all students except those enrolled exclusively for off-campus credit courses. These fees are waived for senior citizens, for employees under the fringe benefit plan, for intern participation holders, and for students on training session under the cooperative education program who are not taking course work at UCF. Students enrolled at Brevard campus, Daytona campus or South Orlando campus must also be assessed the athletic fee.

Late Registration Fee\$25.00

This nonrefundable fee is required of students who register during the late registration periods or fail to pay full fees by the established deadline.

Student Vehicle Registration, per calendar year\$13.00

This fee is required of everyone (including full-time, part-time, and courtesy students) operating a motor-powered vehicle on campus.

Room/Board Plans (Several optional Food Service Plans are available.)

Per Semester..... 1,088.00-\$1,362.00
Charge for late payment.....\$25.00

Intern Participation Holder..... \$3.76/hr.

I.D. Card Replacement.....\$5.00

INSTALLMENT FEE PAYMENT PLAN

This plan will not be available to Financial Aid recipients unless the total tuition fee liability to the student exceeds, by at least \$100.00, the total aid to be awarded excluding payment for wages (paid by the University) for personal services. Student must sign a promissory note which will indicate that the student must pay at least 50% of the fee liability by the end of the add/drop period, and remaining fees no later than the beginning of the ninth week of classes. Loan forms are available in the Office of Student Financial Services, Room 112, Administration Building. There will be a service charge of \$5.00.

REFUND OF FEES

A refund of fees will be made under certain conditions upon presentation of a Certification of Withdrawal issued by the Registrar to the Student Accounts Office.

- A. A full refund will be issued under the following circumstances:
 - 1. Withdrawal is made before the end of the add/drop period. Summer refunds will not be made until after Term B registration and drop/add, except by written application to Student Accounts, Room 112, Administration Building.
 - 2. The course is cancelled by the University.
 - 3. A student is withdrawn from a course by the University for whatever reason.
- B. A partial refund (25% of the total fees paid, less building and capital improvement fees) will be made when complete withdrawal from the University is made prior to the end of the fourth week of classes during a 16/17 week semester, or at the end of the first quarter of the term during a mini-semester or summer semester (rounded out to the end of the week in which the first quarter occurs).
- C. Refunds may be made for exceptional circumstances at any time upon withdrawal from one or more courses. Up to 100% of tuition and registration fees may be refunded under circumstances determined by the University to be exceptional, including, but not limited to, sickness, death, involuntary call to military service, or administrative errors created by the University.
- D. Liability Reduction: Students who have authorized deferments and therefore have not paid their total fees will be eligible to have their liability reduced (in lieu of refund) in the amounts and under the authorized circumstances outlined in the foregoing paragraphs.

APPEALS

Students who wish to appeal denial of deferment, refund or waiver should initiate a student petition form 41-561 and submit it to the Committee for Resolving Fee Payment Questions. Form 41-561 may be obtained from the Undergraduate Studies Office, Student Affairs, University Cashier or Student Accounts and should be returned to Student Accounts, ADM 112.

PAST DUE ACCOUNTS

Any, and all, financial obligations to the University must be met by the student if "good standing" is to be maintained. Failure to meet such 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 by the University Controller. All costs of collection, including attorney's fees, shall be borne by the debtor.

FLORIDA RESIDENCY REQUIREMENT

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

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



OFFICE OF GRADUATE STUDIES

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

ORGANIZATION OF GRADUATE STUDIES

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

THE GRADUATE COUNCIL

The Graduate Council is an advisory body to the Dean of Graduate Studies. Its functions are to:

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

Review and make recommendations concerning all proposed new graduate programs.

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

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

Review and make recommendations concerning appeals (by petition) from students for exceptions to University policies or admission decisions.

DOCTORAL PROGRAM SUBCOMMITTEE

A Doctoral Programs Subcommittee is established for the general advocacy of doctoral programs throughout the University community and to review, determine and recommend policies for doctoral programs to the Graduate Council. Membership consists of the Graduate Studies associate dean as chairman, one representative from each doctoral program, and one member elected from the Graduate Council.

GRADUATE PROGRAMS

UCF Authorized Graduate Degree Programs and Coordinators

Degree	Program	Coordinator	Phone	Room
Arts and Sciences				
M.S.	Biological Sciences	Dr. Gennaro	275-2141	BIO 406
M.S.	Chemistry, Industrial	Dr. Gupton	275-2246	CHM 331
M.A.	Communication	Dr. Fedler	275-2681	HFA 5347
M.S. & Ph.D.	Computer Science	Dr. Cottrell	275-2341	CCII 255
M.A.	English	Dr. Adicks	275-2286	HFA 459
M.A.	History	Dr. Pauley	275-2224	HFA 505B
M.S.	Mathematical Science	Dr. Andrews	275-2585	CCII 259
M.S.	Microbiology	Dr. Gennaro	275-2141	BIO 406
M.S.	Physics	Dr. Llewellyn	275-2325	EN 310
M.A.	Political Science	Dr. Vites	275-2608	HFA 425
M.S.	Psychology, Clinical	Dr. McGuire	275-2544	PH 322
	Psychology, Industrial	Dr. Burroughs	275-2568	PH 313
M.P.A.	Public Administration	Dr. Kimmitt	275-2443	PH 336
M.A.	Applied Sociology	Dr. Cook	275-2227	HFA 402
M.S.	Statistical Computing	Dr. Somerville	275-2695	CCII 135

Business Administration		Mr. Kilbride	275-2184	PH 205
M.B.A.	Business Administration			
M.A.	Applied Economics			
M.S.	Accounting			
Education		Dr. Higginbotham	275-2436	ED 115
M.Ed. & M.A.	Elementary, Secondary and K-12			
M.S.	School Psychology			
Ed.S.	Specialist degrees in Administration/Supervision or Curriculum/Instruction			
Ed.D.	Doctoral degrees in Administration/Supervision or Curriculum/Instruction			
Engineering		Dr. Mathews	275-2455	CEBA
M.S.E. and M.S. degrees	in Computer Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering			
M.S.E., M.S. and M.C.E. degrees	in Civil Engineering			
M.S.E., M.S. and M.S.E.S.M. degrees	in Environmental Engineering			
M.S.E. and M.S. degrees	in Manufacturing			
Ph.D.	Civil Engineering			
Ph.D.	Computer Engineering			
Ph.D.	Electrical Engineering			
Ph.D.	Environmental Sciences			
Ph.D.	Industrial Engineering			
Ph.D.	Mechanical Engineering			
Health				
M.A.	Communicative Disorders	Dr. Hedrick	275-2121	EN 113
M.S.	Health Sciences	Dr. Mendenhall	275-2972	BIO 306

GRADUATE PROGRAMS				
Degree	Program	Coordinator	Phone	Room
M.S.	Biological Sciences	Dr. Gennaro	275-2747	BIO 402
M.S.	Chemistry, Industrial	Dr. Guffey	275-2640	CHM 207
M.A.	Communication	Dr. Feltner	275-2601	HFA 207
M.S. & Ph.D.	Computer Sciences	Dr. Corbell	275-2641	CCR 205
M.A.	English	Dr. Adams	275-2605	HFA 428
M.A.	History	Dr. Bailey	275-2604	HFA 206
M.S.	Mathematical Sciences	Dr. Andrews	275-2626	ODU 328
M.S.	Microbiology	Dr. Gurnea	275-2747	BIO 402
M.S.	Physics	Dr. Lewellen	275-2626	EN 210
M.A.	Political Science	Dr. Vittore	275-2608	HFA 429
M.S.	Psychology, Clinical	Dr. McGuire	275-2644	PH 365
	Psychology, Industrial	Dr. Baumgardner	275-2644	PH 312
M.P.A.	Public Administration	Dr. Kinnell	275-2643	PH 328
M.A.	Applied Sociology	Dr. Cook	275-2627	HFA 402
M.S.	Statistical Computing	Dr. Somerville	275-2625	CCR 128

UNIVERSITY GRADUATE REGULATIONS

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

MASTER'S PROGRAMS

STUDENT'S RESPONSIBILITY

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

EXCEPTION TO GRADUATE REGULATIONS

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

MASTER'S COMMITTEE OR ADVISOR

Appointment of Committee or Advisor

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

Advisory Committee

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

PROGRAM OF STUDY

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

UCF EMPLOYMENT

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

COURSE REQUIREMENTS

COURSE LOADS

Normally, a full-time graduate student must take at least 6 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 postbaccalaureate 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 per cent of the credits offered for the degree must be in a single field of concentration. *A research report is required for this degree.*

LANGUAGE REQUIREMENTS

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

DIRECTED INDEPENDENT STUDIES COURSES

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

APPLICABLE CREDITS AND COURSES

RESIDENCE CREDIT

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

CREDIT BY EXAMINATION

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

TRANSFER OF CREDIT

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 postbaccalaureate 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 postbac 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 Graduate Council. Exception to this rule has been granted to Computer Science, and Mathematics and Statistics Programs.

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

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

ACADEMIC STANDARDS

GPA 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 Graduate Studies (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 he 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 POSTBACCALAUREATE status. (Students admitted on PROVISIONAL status are similarly given 9 semester hours to attain a 3.0 GPA).

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

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

THESIS AND RESEARCH REPORT GRADES

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

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

MAXIMUM HOURS OF UNSATISFACTORY GRADES

Unsatisfactory grades for graduate students consist of grades below "B" and unresolved "I" grades. A student may earn a maximum total of 6 semester hours of unsatisfactory grades in his program of study. This does not imply that a course in which a student has received these grades cannot be repeated to provide a better grade. Both grades will be used in computing the GPA 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 his permanent record.

REVIEW OF PERFORMANCE

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

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

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

DEGREE APPLICATION PROCESS

APPLICATION FOR DEGREE

An Intent to Graduate form must be filed in the University Records Office by the end of the second 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 Graduate Studies that all University and program of study requirements have been met.

REGISTRATION IN TERM OF GRADUATION

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

DOCTORAL PROGRAMS

UNIVERSITY ADMISSIONS STANDARDS

Admission to graduate status 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 scores. Admission to graduate status does not constitute admission to a doctoral program.

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 his 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 Graduate Studies 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 Graduate Studies.

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 which apply to master's students will not be lower for doctoral and specialist students.

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 Graduate Studies. 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".

Time Limitation

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

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 his 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 Office of Graduate Studies. All written original examination materials will be kept in the student's 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 his 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), must be approved by the Dean of Graduate Studies. Program areas may specify in greater detail the distribution of the three in-college members. All members should be in fields related to the dissertation topic. All members vote on acceptance or rejection of the dissertation. The dissertation must be approved by a majority of the committee.

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. The final unbound dissertation approved by the Library will be submitted in triplicate to the Office of Graduate Studies before the specified deadline. The designated original of the dissertation and one copy will be sent to the Library for hardbinding. The third copy (also unbound) of the dissertation will be forwarded to University Microfilms International by the Office of Graduate Studies. The student will pay a binding fee for the two Library copies. If the candidate wishes to have the third copy bound after it is returned from UMI, a third binding fee must be paid. There is also a nominal fee for microfilming the dissertation.

Dissertation Defense. The Dean of Graduate Studies or his 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 Graduate Studies.

STUDENT SERVICES

HOUSING OFFICE

Enrolled single students paying registration fees for a minimum of nine semester hours may apply for assignment to University residential units. Priority of assignment is given first to current residents and second to new students admitted in good standing. Any single student applicant who has been admitted to the University may submit an application requesting housing and food service for a specific term. Priority of room assignments is based on the date of receipt of the completed application in the Housing Office. Applicants should carefully read the application before submitting it with the \$25 pre-payment to the Housing Office.

INTERNATIONAL STUDENT SERVICES

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

STUDENT HEALTH SERVICE

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

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

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

MINORITY STUDENT SERVICES

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

UNIVERSITY COUNSELING AND TESTING CENTER

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

STUDENT ACTIVITIES

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

STUDENT GOVERNMENT

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

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

STUDENT CENTER/STUDENT UNION

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

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

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

OFFICE OF AREA CAMPUS SERVICES

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

OFFICE OF EVENING STUDENT SERVICES

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

HANDICAPPED STUDENT SERVICES

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

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

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

CREATIVE SCHOOL FOR CHILDREN

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

CLASSROOM RESPONSIBILITY

Students are responsible for maintaining classroom decorum appropriate to the educational environment. When the conduct of a student or group of students varies from acceptable standards to such an extent that normal classroom procedures are interfered with, the instructor has the authority to remove the offending party from the room.

STUDENT CONDUCT

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

When a student is involved in an offense resulting in criminal charges prior to admission, the circumstances of the case may be reviewed by the appropriate Student Affairs committee to consider the student's eligibility for admission to the University as well as participation in extracurricular activities.

ACADEMIC ETHICS POLICY

The faculty of the University of Central Florida are committed to a policy of honesty in academic affairs. Conduct for which students may be subject to administrative and/or disciplinary penalties up to and including suspension or expulsion include:

Dishonesty consisting of cheating of any kind with respect to examination, course requirements, or illegal possession of examination papers. Any student helping another to cheat is as guilty as the student assisted.

Plagiarism consisting of the deliberate use and appropriation of another's work without any indication of the source and the passing off of such work as the student's own. Any student who fails to give credit for ideas or materials taken from another is guilty of plagiarism.

In cases of cheating or plagiarism, the instructor shall take whatever academic action he deems appropriate. This may range from loss of credit for a specific assignment, examination, or project, to removal from the course with a grade of "F." The instructor should seek to resolve the problem with the student to their mutual satisfaction. In addition, the instructor may also request disciplinary action through the Dean of Students if necessary, who shall proceed in accordance with provisions outlined in the APA Chapter 6C7-5.041.

CONFIDENTIALITY OF STUDENT RECORDS

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

OFFICE OF VETERANS AFFAIRS

The Office of Veterans Affairs is for students who are utilizing veterans benefits to further their education. The office has a professional staff augmented by student veterans to assist in providing information concerning entitlements, filing claims to the Veterans Administration, and certifying enrollment at the University. Counseling for personal and academic problems is provided as well as referral to various agencies in the community. Veterans must be certified through this office to receive VA educational benefits. Veterans' academic progress is monitored on a continuous basis.

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

VETERANS BENEFITS

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

Those students with an undergraduate degree who are classified as postbaccalaureate must carry at least twelve (12) semester hours for full VA benefits, nine (9) semester hours for three-fourths, and six (6) semester hours for one-half. Five (5) semester hours or less will be reimbursed to the veteran at cost of instruction only. Veterans and eligible dependents who are pursuing course work while in a postbaccalaureate 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). Post-baccalaureate students pursuing teachers' certification, CPA examination or other special non-degree programs will receive benefits for all courses required by their program of study.

Those accepted in a graduate degree-seeking program are required to carry six (6) semester hours for full benefits, four (4) to five (5) for three-fourths, and three (3) semester hours for one-half.

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

Those on co-op status may choose to draw VA benefits for their period of eligibility either under the institutional or the cooperative program.

RECREATIONAL SERVICES

Recreational Services offers a variety of sports and recreational opportunities to students, faculty, and staff at the University. Included in the program are intramural sports leagues and tournaments, coed sports, organized recreation/fitness opportunities, unstructured open recreation and competitive sports clubs. For the fitness minded, there are physical fitness classes, a Rec-Milers Club and ample equipment which may be checked out and used on the University recreational facilities. A handbook which provides full information, rules, and regulations on all activities is available from the Office of Recreational Services.

INSTRUCTIONAL RESOURCES

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

UNIVERSITY BOOKSTORE

The University Bookstore carries required textbooks, supplemental books, and associated supplies for all UCF courses. In addition, a complete line of school and art supplies, sundries, paperbacks, gifts, and other items of interest is available. A customer service desk provides for special orders such as class rings. During the last three days of each semester, the bookstore has a "buy-back" period for used 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
(305) 632-4127

UCF DAYTONA BEACH CAMPUS

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

UCF SOUTH ORLANDO CAMPUS

7300 Lake Ellenor Drive
Orlando, Florida 32809
(305) 855-0881

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 Graduate Studies.
- 5000-5999 are beginning graduate level courses.
- 6000-6999 are courses open only to graduate students.
- 7000 are doctoral level courses.

FLORIDA STATEWIDE COURSE NUMBERING SYSTEM

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

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

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

It should be noted that a receiving institution is not precluded from using 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—000.

FIRST DIGIT

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

TITLES

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

LAB INDICATORS

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

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

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

Examples: PSY 6318 (lecture only)

ENV 6017L (lab only)

PCB 6235C (lecture & lab combined)

SPECIAL COURSES

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

In order to register for any of the special numbers below, a student must present an authorization form (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
*Thesis		6971
*Thesis—Specialist		6973
*Doctoral Research		7919
*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 nineteen academic departments, thirteen of which offer graduate degrees: Biological Sciences, Chemistry, Communication, Computer Science, English, History, Mathematics, Physics, Political Science, Psychology, Public Service Administration, Sociology and Anthropology, and Statistics. The specific programs for the various degrees are listed below.

COLLEGE ADMINISTRATION

J. B. Rollins..... Dean
L. H. Armstrong..... Assistant Dean

Doctor of Philosophy

Computer Science

Master of Arts

Communication
English
History
Political Science
Sociology, Applied

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

Master of Science

Biological Sciences
Chemistry, Industrial
Computer Science
Mathematical Science
Microbiology
Physics
Psychology (Clinical and Industrial/Organizational
Programs are offered)
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 chairperson who reports to the dean of the college. A graduate program coordinator is designated for each program and is the key contact on questions of admission and degree requirements. Consult the individual degree program listings for descriptions of requirements and courses offered by each program.

BIOLOGICAL SCIENCES

R. N. Gennaro.....Graduate Program Coordinator
Office: BIO 406, Phone 275-2141

Biological Sciences Faculty

O. M. Berringer, Jr., Ph.D..... Professor
L. M. Ehrhart, Ph.D..... Professor
L. L. Ellis, Ph.D..... Provost and Professor
J. L. Koevenig, Ph.D..... Professor
D. T. Kuhn, Ph.D..... Professor
H. A. Miller, Ph.D..... Professor
J. A. Osborne, Ph.D..... Professor
F. F. Snelson, Jr., Ph.D..... Chairman and Professor
I. J. Stout, Ph.D..... Professor
H. C. Sweet, Ph.D..... Professor
W. K. Taylor, Ph.D..... Professor
H. O. Whittier, Ph.D..... Professor
R. J. Laird, Ph.D..... Associate Professor
D. H. Vickers, Ph.D..... Associate Professor
D. W. Washington, Ph.D..... Associate Professor

Microbiology Faculty

R. J. Wodzinski, Ph.D..... Professor
J. F. Charba, Ph.D..... Associate Professor
R. N. Gennaro, Ph.D..... Associate Professor
R. S. White, Ph.D..... Associate Professor
R. E. Longley, Ph.D..... Assistant Professor

ADMISSION

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission 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 3 letters of recommendation and a written statement of past experience and research, area of interest, and immediate and long-range goals. Personal interviews are helpful but not required. Foreign students are required to submit a TOEFL score of at least 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 seven years be accepted.

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

PROGRAMS IN BIOLOGICAL SCIENCES

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

The Master of Science degree in Microbiology requires a thesis option and a minimum of 30 semester hours of courses. It is listed separately, immediately following this section.

MASTER OF SCIENCE DEGREE REQUIREMENTS — BIOLOGICAL SCIENCES

THESIS OPTION

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

Group A (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 6746C	Organismal Physiology		4 hours
	or		
PCB 6365	Environmental Physiology		3 hours
Group B (both courses)			8 Semester Hours
BSC 6938	Biology Seminar		2 hours
BSC 6971	Thesis		6 hours
Group C			8-10 Semester Hours

Restricted electives acceptable to the student's graduate committee.

Total Minimum Semester Hours Required: 30

NONTHESIS OPTION

A student selecting the biology nonthesis 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 6746C	Organismal Physiology		4 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

MASTER OF SCIENCE DEGREE REQUIREMENTS — MICROBIOLOGY

MICROBIOLOGY THESIS PROGRAM

Group A (21 hours—all courses)	21 Semester Hours
APB 5581 Applied Microbiology	3 hours
MCB 5205 Infectious Processes	3 hours
MCB 5505C Virology	3 hours
MCB 6417C Microbial Metabolism	3 hours
MCB 6971 Thesis	6 hours
PCB 6235C Immunochemistry	3 hours
Group B	7 Semester Hours
Restricted electives acceptable to student's graduate committee.	
Group C	2 Semester Hours
MCB 6938 Microbiology Seminar or	
BSC 6938 Biology Seminar	
Total Minimum Semester Hours Required:	30

BIOLOGICAL SCIENCES AND MICROBIOLOGY COURSES

APB 5581 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.	
BOT 5495C Bryology	3 cr (2,3)
PR: BOT 3303C 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.	
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.	
BOT 6146C Terrestrial Vegetation	4 cr (2,6)
PR: 8 hours in biological sciences or science teaching experience or C.I. Classification and identification among terrestrial plant groups and their natural association in the field. Major reference sources reviewed.	
MCB 5205 Infectious Process	3 cr (3,0)
PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.	
MCB 5505C Virology	3 cr (2,3)
PR: MCB 3013C and BCH 4054. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification.	

- MCB 6417C Microbial Metabolism** 3 cr (3,1)
PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and synthesis.
- 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 5806 Endocrinology** 3 cr (3,0)
PR: PCB 4723 and BCH 4053 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.
- PCB 6049 Contemporary Studies in Biology** 2 cr (2,0)
PR: Graduate standing. Analysis of current publications and developments in theory and concepts of biological sciences. May be repeated for credit as content is variable.
- PCB 6235C Immunochemistry** 3 cr (2,3)
Concepts of antibody diversity, affinity for an antigen, kinetics of the antibody and antigen response and thermodynamic consideration.
- 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 6585C Advanced Genetics** 5 cr (3,6)
PR: PCB 3063 or C.I. Current advances in molecular, developmental, cytological, and human genetics will be stressed.
- PCB 6746C Organismal Physiology** 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.
- 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 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.
- 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

MCB 6971 Thesis

1-6 cr

CHEMISTRY, INDUSTRIAL

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

G. L. Baker, Ph.D. Professor
C. A. Clausen, Ph.D. Professor
G. N. Cunningham, Ph.D. Professor
G. R. Hertel, Ph.D. Professor
F. E. Juge, Ph.D. Associate Vice President and Professor
B. C. Madsen, Ph.D. Professor
G. Mattson, Ph.D. Chairman and Professor
W. W. McGee, Ph.D. Professor
L. M. Trefonas, Ph.D. Vice President for Sponsored Research
and Graduate Studies Dean and Professor
J. T. Gupton, Ph.D. Associate Professor
S. E. Elsheimer, Ph.D. Assistant Professor
M. D. Hampton, 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 may be required. Results may be used to aid in planning the student's program of study. Deficiencies may require remedial course work.

PROGRAM IN INDUSTRIAL CHEMISTRY

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

MASTER OF SCIENCE DEGREE REQUIREMENTS — INDUSTRIAL CHEMISTRY

REQUIRED COURSES

19 Semester Hours

CHM 5710	Chemical Structure I	2 hours
CHM 5711	Chemical Structure II	2 hours
CHS 5240	Chemical Dynamics I	2 hours
CHS 5241	Chemical Dynamics II	2 hours
CHS 5250	Chemical Synthesis I	2 hours
CHS 5251	Chemical Synthesis II	2 hours
CHS 6260C	Laboratory Principles of Industrial Chemistry	4 hours
CHS 6261	Chemical Processes	3 hours

RESTRICTED ELECTIVE

Three hours of an approved elective may be substituted for three hours of research. Restricted electives include courses in business, computer science, engineering and statistics in keeping with the student's particular needs, interests and background and as approved by the advisory committee.

RESEARCH — a research report is required:

CHM 6918

Research

11 hours



EXAMINATION REQUIREMENTS

Satisfactory completion of a final examination is required.

Total Minimum Semester Hours Required:

30

CHEMISTRY COURSES

CHM 5710 Chemical Structure I

2 cr (2,0)

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

CHM 5711 Chemical Structure II

2 cr (2,0)

PR: CHM 5710. Continuation of CHM 5710.

CHS 5240 Chemical Dynamics I

2 cr (2,0)

PR: CHM 3411 or equivalent. Dynamics of chemical reactions and physical processes including equilibrium systems catalysis, transport processes and physical phenomena at interfaces.

241 Chemical Dynamics II

2 cr (2,0)

PR: CHS 5240. Continuation of CHS 5240.

CHS 5250 Chemical Synthesis I	2 cr (2,0)
PR: CHM 3211, and 3411; or equivalent. Survey of chemical synthesis from the standpoint of planning a synthesis, intermediates, special techniques, protection of functional groups, experimental design and optimization of reaction conditions.	
CHS 5251 Chemical Synthesis II	2 cr (2,0)
PR: CHS 5250. Continuation of CHS 5250.	
CHS 6260C Laboratory Principles of Industrial Chemistry	4 cr (2,6)
PR: C.I. A laboratory study of the basic operations utilized in the chemical industry to synthesize and purify chemical products.	
CHS 6261 Chemical Process Development	3 cr (3,0)
PR: C.I. Consideration of various factors involved in development of a chemical process including determination of technical and economic feasibility, optimizing conditions and planning the development program.	
CHM 6918 Research	11 hours

COMMUNICATION

Fred Fedler.....Graduate Program Coordinator
Office: HFA 537, Phone 275-2681

<i>R. L. Arnold, Ph.D.</i>	Professor
<i>R. W. Buchanan, Ph.D.</i>	Professor
<i>F. E. Fedler, Ph.D.</i>	Professor
<i>J. G. Hoglin, Ph.D.</i>	Professor
<i>B. C. Kissel, Ph.D.</i>	Professor
<i>M. D. Meeske, Ph.D.</i>	Professor
<i>T. O. Morgan, Ph.D.</i>	Professor
<i>M. T. O'Keefe, Ph.D.</i>	Professor
<i>K. P. Taylor, Ph.D.</i>	Professor
<i>A. Pryor, Ph.D.</i>	Professor
<i>R. H. Davis, Ph.D.</i>	Associate Professor
<i>W. K. Grasty, Ph.D.</i>	Associate Professor
<i>G. K. McCann</i>	Associate Professor
<i>R. Smith</i>	Associate Professor
<i>E. B. Wycoff, Ph.D.</i>	Associate Professor
<i>J. F. Butler, Ph.D.</i>	Assistant Professor
<i>W. J. Hall</i>	Assistant Professor
<i>F. L. Johnson</i>	Assistant Professor
<i>M. S. Sullivan</i>	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 900 on the verbal-quantitative sections of the General (Aptitude) test of the GRE. Alternatively, a GPA of 2.50-2.99 combined with a GRE of 1000 would also be acceptable.

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, methodology and media, 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
MMC 6445	Mass Media Research I	3 hours
MMC 6446	Mass Media Research II	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

RESTRICTED ELECTIVES

3 Semester Hours

Select at least one of these four courses:

COM 5625	Ethics in Communication
MMC 6612	Communication and Government
COM 6121	Communication Management
SPC 5200	Evolution of Communication Theory

ELECTIVES

6 Semester Hours

THESIS

4 Semester Hours

Total Minimum Semester Hours Required: 34

COMMUNICATION COURSES

COM 5625 Ethics in Communication

3 cr (3,0)

The critical examination of ethical issues in human communication.

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 6400. 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

Larry K. Cottrell.....Graduate Program Coordinator
 Office: CC-II 206, Phone 275-2341

<i>R. C. Brigham, Ph.D.</i>	Professor
<i>R. D. Dutton, Ph.D.</i>	Professor
<i>T. J. Frederick, Ph.D.</i>	Professor
<i>C. E. Hughes, Ph.D.</i>	Professor
<i>A. Mukherjee, Ph.D.</i>	Chairman and Professor
<i>L. K. Cottrell, Ph.D.</i>	Associate Chairman and Associate Professor
<i>J. R. Driscoll, Ph.D.</i>	Associate Professor
<i>H. Gerber, Ph.D.</i>	Associate Professor
<i>R. Guha, Ph.D.</i>	Associate Professor
<i>D. Isner, Ph.D.</i>	Associate Professor
<i>J. M. Moshell, Ph.D.</i>	Associate Professor
<i>D. A. Workman, Ph.D.</i>	Associate Professor
<i>M. A. Bassiouni, Ph.D.</i>	Assistant Professor
<i>F. Gomez, Ph.D.</i>	Assistant Professor
<i>S. D. Lang, Ph.D.</i>	Assistant Professor
<i>J. Leeson, Ph.D.</i>	Assistant Professor
<i>Z. Malik, Ph.D.</i>	Assistant Professor
<i>A. Orooji, Ph.D.</i>	Assistant Professor
<i>C. Segami, Ph.D.</i>	Assistant Professor
<i>H. N. Srinidhi, Ph.D.</i>	Assistant Professor

ADMISSION

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

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

NOTE: All students seeking Graduate status must take the General (Aptitude) Test of the GRE and submit the score to the Graduate Admissions Office.

Departmental Requirements

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

An undergraduate degree in computer science is desirable, but not required. Applicants without a strong undergraduate background in computer science will be required to demonstrate an understanding of the material covered in the following courses:

CDA 4102	Introduction to Computer Architecture
CIS 4112	Databases
CNM 4110	Numerical Calculus
COP 4550	Programming Languages I
COP 4620	Programming Systems
COT 4001	Discrete Computational Structures

A student without this background is required to successfully complete at least three of the courses listed above before admission as a graduate student. The remaining courses must then be taken after admission to regular graduate status, but may not be used in the graduate program of study. Alternately, the student may choose to demonstrate the knowledge of these courses by scoring well on the 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.

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

PROGRAMS IN COMPUTER SCIENCE

The 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, information systems, computer architecture, and computer science theory before specializing in a research area.

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

**MASTER OF SCIENCE DEGREE REQUIREMENTS —
COMPUTER SCIENCE**

The requirements for the plan of study are listed below:

REQUIRED COURSES

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

12 Semester Hours

a.	CDA 5106	Advanced Computer Architecture I	3 hours
b.	CIS 5012	Information & File Systems Analysis	3 hours
c.	CNM 5142	Computational Methods/Linear Systems	3 hours
		or	
	COT 5314	Computational Complexity	3 hours
		or	
	COT 5305	Design and Analysis of Algorithms	3 hours
d.	COP 5554	Programming Languages II	3 hours
		or	
	COP 5613	Operating System Design Principles	3 hours

RESEARCH PROJECT

3 Semester Hours

RESTRICTED ELECTIVES

15 Semester Hours

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. The remaining nine credits will normally be taken from 5000- and 6000-level Computer Science courses. Approval may be granted for at most six of these credits to be taken from graduate courses outside Computer Science.

Total Minimum Semester Hours Required:

30

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

- The plan of study must contain at least 30 semester hours.
- 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, and exactly 3 hours of research (6918).
- The plan of study can contain no more than 6 hours (or two courses) of independent study (5907 or 6908).
- 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 project, normally done over at least two semesters. The total credit earned by the student for the research project is exactly 3 hours which could be distributed over several semesters under the course number 6918 (with appropriate acronym designating the area, e.g., COP 6918). The student must enroll for at least one hour of 6918 in the semester graduation is to occur.

AREAS OF EMPHASIS

A 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, but are included here to show the flexibility of the Master of Science program.

Sample Plan of Study #1 — Architecture Emphasis

REQUIRED

12 Semester Hours

CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information & File Systems Analysis	3 hours
COT 5305	Design & Analysis of Algorithms	3 hours
COP 5613	Operating Systems Design Principles	3 hours

ELECTIVES (6 hours at 6000-level)

15 Semester Hours

CDA 5182	Architecture and Design of VLSI	3 hours
CDA 5186	VLSI Design Tools	3 hours
CDA 5188	VLSI Testing and System Integration	3 hours
CDA 6184	VLSI Algorithms and Architecture	3 hours
CDA 6107	Advanced Computer Architecture II	3 hours

RESEARCH

3 Semester Hours

CDA 6918	Research	3 hours
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Sample Plan of Study #2 — Operating Systems Emphasis

REQUIRED

12 Semester Hours

CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information & File Systems Analysis	3 hours
COT 5314	Computational Complexity	3 hours
COP 5613	Operating Systems Design Principle	3 hours

ELECTIVES (6 hours at 6000-level)		15 Semester Hours
COP 6614	Operating Systems	3 hours
COP 6615	Operating Systems Theory	3 hours
CDA 6166	Computer Communications Networks Architecture	3 hours
CDA 6168	Computer Networks Design & Distributive Processing	3 hours
COT 5305	Design and Analysis of Algorithms	3 hours

RESEARCH		3 Semester Hours
COP 6918	Research	3 hours

Sample Plan of Study #3 — Artificial Intelligence Emphasis

REQUIRED		12 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information & File Systems Analysis	3 hours
COT 5305	Design and Analysis of Algorithms	3 hours
COP 5554	Programming Languages II	3 hours

ELECTIVES		15 Semester Hours
CAP 5623	Heuristic Programming	3 hours
CAP 5670	Introduction to Intelligent Systems	3 hours
CAP 6646	Computer Understanding of Natural Languages	3 hours
CAP 6672	Intelligent Systems	3 hours
COT 5127	Formal Languages and Automation Theory	3 hours

RESEARCH		3 Semester Hours
CAP 6918	Research	3 hours

Sample Plan of Study #4 — Data Base Management Emphasis

REQUIRED		12 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information & File Systems Analysis	3 hours
CNM 5142	Computational Methods/Applications	3 hours
COP 5613	Operating Systems Design Principle	3 hours

ELECTIVES (6 hours at 6000-level)		15 Semester hours
CIS 6122	Data Base Management Systems	3 hours
CIS 6124	Date Base Management Systems Theory	3 hours
COT 5305	Design and Analysis of Algorithms	3 hours
CIS 5041	Information Organization and Retrieval	3 hours
COP 5632	Software Engineering	3 hours

RESEARCH		3 Semester Hours
CIS 6918	Research	3 hours

Sample Plan of Study #5 — Software Tools Emphasis

REQUIRED		12 Semester Hours
CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information & File Systems Analysis	3 hours
COT 5314	Computational Complexity	3 hours
COT 5554	Programming Languages II	3 hours

ELECTIVES (6 hours at 6000-level)**15 Semester Hours**

COT 5305	Design and Analysis of Algorithms	3 hours
COT 6202	The Theory of Parsing and Translation	3 hours
COP 6643	Compiler Construction	3 hours
COP 5632	Software Engineering	3 hours
COP 5682	Software Tools	3 hours

RESEARCH**3 Semester Hours**

COP 6918	Research
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**DOCTOR OF PHILOSOPHY DEGREE REQUIREMENTS —
COMPUTER SCIENCE****REQUIRED COURSES****18 Semester Hours**

All students planning to apply for the doctoral program must take all five of the following required courses:

CDA 5106	Advanced Computer Architecture I	3 hours
CIS 5012	Information and File System Analysis	3 hours
COP 5613	Operating System Design Principles	3 hours
COT 5314	Computational Complexity	3 hours
COT 5127	Formal Languages and Automata Theory	3 hours

and one of the following five courses:

CAP 5623	Heuristic Programming	3 hours
CDA 5182	Architecture and Design of VLSI	3 hours
COP 5554	Programming Languages II	3 hours
CNM 5142	Computational Methods/Linear Systems	3 hours
COT 5305	Design and Analysis of Algorithms	3 hours

PH.D. QUALIFYING EXAMINATION

The Qualifying Examination is taken only when the student has obtained regular graduate status in Computer Science and has completed no more than 27 semester hours of course work including the courses required for the examination as listed below. The purpose of this examination is to determine the student's knowledge in five important areas of computer science — architecture, languages, operating systems, data base systems and the theory of computation — as well as to determine the potential of the student to pursue an area of specialization and to do research.

The Qualifying Examination will consist of five written exams in the general areas described below, plus a single written examination designed to test the student's research potential in at least one of these five areas.

1. Architecture: CDA 5106 Advanced Computer Architecture
2. Languages: COT 5127 Formal Languages and Automata Theory
3. Operating Systems: COP 5613 Operating System Design Principles
4. Theory: COT 5314 Computational Complexity
5. Date Base Systems: CIS 5012 Information and File Systems Analysis

To be admitted to the Ph.D. program, the student must pass the general portion in all five areas and the research portion in at least one area. It is then the student's obligation to find a qualified faculty member in Computer Science willing to chair the advisory committee. The student and the committee will then formulate a plan of study to determine the advanced graduate level courses and other degree requirements which must be completed.

Each examination area requires the student to answer two sets of questions. The general set of questions relates directly to the content of the 5000-level courses shown above. The research potential questions, which require no further preparation beyond the 5000-level courses, may cast concepts into new molds and require more creative thought. Some questions may relate to more than one of the above content areas.

Each faculty member contributing to a given examination will grade that part of the examination. All faculty involved in a given examination will reach a pass/fail decision. The Computer Science Graduate Committee will then evaluate the results for each student, with the following options:

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

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

The Qualifying Examination will be offered twice each year — during September and January.

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

PLAN OF STUDY

The plan of study will consist of a minimum of seventy-two semester hours of graduate credit, including eighteen semester hours for the required six courses used for the Ph.D. Qualifying Examination. The remainder of the credits must include a minimum of twenty-four semester hours of advanced (6000-level) graduate courses with a special emphasis on the doctoral area of specialization and an adequate treatment of other major areas of computer science and related disciplines. The plan of study must include a minimum of fifteen (15) semester hours of Ph.D. research credits.

CANDIDACY EXAMINATION

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

RESEARCH COMMITTEE

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

RESIDENCE REQUIREMENT

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

TIME LIMITATION

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

SPECIAL DEGREE REQUIREMENTS

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

DISSERTATION AND ORAL DEFENSE

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

COMPUTER SCIENCE COURSES

CAP 5612 Computer Based Educational Systems 3 cr (3,0)

PR: COP 4550 or equivalent. The design and implementation of computer based educational systems. Selected projects using high-level programming languages.

CAP 5623 Heuristic Programming 3 cr (3,0)

PR: COP 4550, COT 4001. An introduction to basic artificial intelligence concepts including problem solving, knowledge representations, knowledge based systems, natural language understanding by computer.

CAP 5670 Introduction to Intelligent Systems 3 cr (3,0)

PR: COP 4550 or equivalent. Origin/evolution of machine intelligence; heuristic and epistemological approaches to artificial intelligence; what computers can and cannot do; symbiotic role of human and computers.

CAP 5722 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 5746 Simulation/Performance of Computer Systems 3 cr (3,0)

PR: CDA 5106 and COP 5613. Performance measurement of hardware and software systems, simulation techniques, monitoring programs.

CAP 6646 Computer Understanding of Natural Language 3 cr (3,0)

PR: CAP 5623. A study of the different approaches to build programs to "understand" natural language. The theory of parsing, knowledge representation, memory and inference will be studied.

CAP 6672 Intelligent Systems 3 cr (3,0)

PR: CAP 5670. Study of computer systems exhibiting intelligent attributes, particularly learning; basic concepts related to characteristics, capabilities, design and principles of operation; discussion of relevant philosophical/social issues.

CAP 6723 Computer Graphic Systems II 3 cr (3,0)

PR: CAP 5722. Modeling design and analysis of graphics systems; data structures, numerical techniques, algorithms and optimum seeking methods for various problems in computer graphics.

CDA 5106 Advanced Computer Architecture I 3 cr (3,0)

PR: CDA 4102. Evolution of computer architecture; memory organization; cache; virtual memory; high speed processor design; pipeline multi-functional and array machines; special architecture case studies; overview of channel architecture.

CDA 5182 Architecture and Design of VLSI 3 cr (3,0)

PR: CDA 4102 or equivalent. Overview of VLSI technology. Logical design of basic subsystems; integrated system design tools; design of a VLSI computer system.

CDA 5186 VLSI Design Tools 3 cr (3,0)

PR: CDA 5182, 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 5188 VLSI Testing and System Integration** **3 cr (3,0)**
PR: CDA 5182. 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. Multiprocess systems; interconnection network; stack architectures; high-level language architecture; design languages; performance evaluation.
- CDA 6108 Current Topics in Computer Architecture** **3 cr (3,0)**
PR: CDA 6107. Associative machine architectures; non-numeric and database machines; data flow architecture; fault tolerant architecture.
- CDA 6166 Computer Communications Networks Architecture** **3 cr (3,0)**
PR: CDA 5106. Introduction to networking; architecture of circuit, message and packet switching networks; local computer networks architecture; modems, protocols.
- CDA 6168 Computer Networks Design and Distributive Processing** **3 cr (3,0)**
PR: CDA 6166 and COP 5613. Computer communications networks design considerations, network operating system, distributive processing.
- CDA 6184 VLSI Algorithms and Architecture** **3 cr (3,0)**
PR: CDA 5182. VLSI algorithms, algorithms on regular geometries, hierarchically organized machines; illustrative algorithms: Matrix, DFT, recurrence evaluation, pattern matching, searching, sorting, graph, etc.; area-time complexity issues.
- CIS 5012 Information and File Systems Analysis** **3 cr (3,0)**
PR: CIS 4112. Logic and physical information system design. Analysis of file systems. Study of data management systems.
- CIS 5041 Information Organization and Retrieval** **3 cr (3,0)**
PR: CIS 5012. Automatic analysis of information content in natural language text for automatic retrieval. Construction of dictionaries, null, synonym, etc. Recall and precision. Interactive feedback.
- CIS 5234 Computational Techniques in Management Information Systems** **3 cr (3,0)**
PR: CIS 4112. The role of computers in management information systems; analysis, design approaches, processing methods and data management; use of state-of-the-art software in design and development.
- CIS 6122 Data Base Management Systems** **3 cr (3,0)**
PR: CIS 5012. Data base development. Generalized data management systems. Data description and data models. Query languages. Study of available systems.
- CIS 6124 Data Base Management Systems Theory** **3 cr (3,0)**
PR: CIS 6122. Theory of data models, data languages and data base management systems.
- CNM 5142 Computational Methods/Linear Systems** **3 cr (3,0)**
PR: CNM 4110 and MAS 3113. Mathematical models for linear systems, linear programming, the simplex method, integer and mixed-integer programming, introduction to nonlinear optimization and linearization.
- CNM 5148 Computational Methods/Applications** **3 cr (3,0)**
PR: CNM 4110. Computational solution techniques for algebraic equations, ODE and PDE models of applications selected from science, engineering, applied mathematics and computer science.
- CNM 6144 Computational Methods/Analysis I** **3 cr (3,0)**
PR: CNM 5142. Analysis of direct and iterative solutions of systems of linear equations, eigenvalues and vectors and roots of nonlinear equations, error analysis.
- CNM 6145 Computational Methods/Analysis II** **3 cr (3,0)**
PR: CNM 6144. 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.
- COP 5554 Programming Languages II** **3 cr (3,0)**
PR: COP 4550 and COT 4001. 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 5613 Operating System Design Principles** 3 cr (3,0)
PR: COP 4620 or equivalent. The structure and functions of operating systems, process communications techniques, scheduling algorithms, deadlocks, memory management, virtual systems, protection and security.
- COP 5632 Software Engineering** 3 cr (3,0)
PR: COP 4550. Study of design techniques for large software systems, modularization, task assignment, management techniques, implementation techniques, testing, quality control, documentation and maintenance.
- COP 5682 Software Tools** 3 cr (3,0)
PR: COP 4620 and COP 5554. Systems programming languages, concurrent programming, design and implementation of software development/maintenance tools. A large programming project is required.
- COP 6555 Software Science** 3 cr (3,0)
PR: COP 5554 or equivalent. Basic principles of software science including program level, effort, impurity classes and execution. Language comparison project using tools of software science; semantic characterization of languages.
- COP 6582 Theories of Programming Language Semantics** 3 cr (3,0)
PR: COT 5127. Models and theories of semantics. Lambda calculus, denotational semantics, attributed grammars, operational semantics, Vienna Definition Language.
- COP 6614 Operating Systems** 3 cr (3,0)
PR: COP 5613. Techniques in the design and implementation of operating systems. Case studies of several experimental and commercial operating systems.
- COP 6615 Operating Systems Theory** 3 cr (3,0)
PR: COP 5613. Scheduling and queuing theory as applied to the control of computer systems.
- COP 6643 Compiler Construction** 3 cr (3,0)
PR: COP 5554, COT 5127. Techniques in the design and implementation of compilers. Optimization, code generation, error recovery, attributed grammars. A project is required.
- COP 6672 Program Correctness and Verification** 3 cr (3,0)
PR: COT 4001. Mathematical techniques and automated theorem proving for program verification; inductive assertions for partial and total correctness, proving correctness of flowchart programs and recursive programs.
- COT 5127 Formal Languages and Automata Theory** 3 cr (3,0)
PR: COP 4550 and COT 4001. Classes of formal grammars and their relation to automata, normal forms, closure properties, decision problems, LR(k) grammars.
- COT 5305 Design and Analysis of Algorithms** 3 cr (3,0)
PR: COT 4001. Classifications of algorithms, e.g., recursive, divide-and-conquer, greedy, etc. Data structures and algorithm design and performance. Time and space complexity analysis.
- COT 5314 Computational Complexity** 3 cr (3,0)
PR: COT 4001. Properties of algorithms, computational equivalence of machines, time-space complexity measures, examples of algorithms of different complexity, classification of algorithms, classes P and NP.
- COT 5324 Computability Theory** 3 cr (3,0)
PR: COT 4001. Models of computable procedures. Equivalence of models; unsolvable problems; hierarchies of unsolvability; applications to other areas of computer science including formal languages, automata theory, operating systems, automated theorem proving and program verification.
- COT 6202 The Theory of Parsing and Translation** 3 cr (3,0)
PR: COT 5127. Methods of top-down and bottom-up parsing, LL(k), recursive descent, precedence, bounded-context, SR(s,k), SLR(k), LALR(k), LR(k), parser compression and generation.
- COT 6206 Abstract Formal Systems** 3 cr (3,0)
PR: COT 5127. Abstract families of grammars and languages, algebraic automata theory, Petri nets, program schemata, L-systems.

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

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

CAP, CDA, CIS, CNM, COP or COT prefixes are used for the following:

6918 Research	3 credits
7919 Doctoral Research	
7980 Doctoral Dissertation	

ENGLISH

Richard Adicks Graduate Program Coordinator
 Office: HFA 455, Phone 275-2212

<i>R. R. Adicks, Ph.D.</i>	Professor
<i>S. E. Omans, Ph.D.</i>	Chairman and Professor
<i>G. J. Schiffhorst, Ph.D.</i>	Professor
<i>R. E. Umphrey, Ph.D.</i>	Professor
<i>W. C. Wyatt</i>	Professor
<i>J. J. Donnelly, Ph.D.</i>	Associate Professor
<i>R. S. Grove, Ph.D.</i>	Associate Professor
<i>M. E. Sommer, Ed.D.</i>	Associate Professor
<i>B. W. Barnes Crocitto, Ph.D.</i>	Assistant Professor
<i>J. Hemschemeyer</i>	Assistant Professor
<i>D. R. Jones, Ph.D.</i>	Assistant Professor
<i>P. J. Rushin</i>	Assistant Professor
<i>D. L. Stap, Ph.D.</i>	Assistant Professor

ADMISSION

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission are a grade point average (GPA) of 3.0 for the last 60 semester credit hours earned as an undergraduate or a total score of 1000 on the verbal/quantitative section of the General (Aptitude) test of the GRE. Foreign 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.

Each applicant for the specialization in creative writing must submit a portfolio of creative work, consisting of either ten to fifteen pages of poems, or thirty to forty pages of fiction, or the equivalent in any other genre.

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 Subject GRE Test on Literature in English and completing survey courses in British and American Literature.

PROGRAM IN ENGLISH

The Master of Arts in English consists of courses and seminars in British, American, and world literature; creative writing; linguistics; and the teaching of composition.

MASTER OF ARTS DEGREE REQUIREMENTS — ENGLISH/LITERATURE

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

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

REQUIRED COURSES

15 Semester Hours

LIN	5137	Linguistics (or equivalent)*	3 hours
LIT	6009	Literary Genres	3 hours
LIT	6105	World Literature	3 hours
LIT	6365	Movements in Literature	3 hours
LIT	6535	Major Authors	3 hours

*May be waived if student has completed a course in linguistics on the 3000 level or above with a grade of A or B.

ELECTIVES

15 Semester Hours

THESIS — Optional

COMPREHENSIVE EXAMINATION

Total Minimum Semester Hours Required:

30

MASTER OF ARTS DEGREE REQUIREMENTS — ENGLISH/CREATIVE WRITING

Each student must complete at least 33 hours, including Graduate Writing Workshops for a total of 9 hours. Near the end of the degree program, each candidate must submit a publishable book-length manuscript, and write a comprehensive examination based on a prescribed reading list.

REQUIRED COURSES

15 Semester Hours

CRW	6009	Graduate Writing Workshops	3 hours
Must be taken three times for 9 hours			
LIT	5097	Studies in Contemporary Fiction	3 hours
LIT	5039	Studies in Contemporary Poetry	3 hours

RESTRICTED ELECTIVES

9 Semester Hours

Select three courses from the following:

LIT	6105	World Literature	3 hours
LIT	6009	Literary Genres	3 hours
LIT	6365	Movements in Literature	3 hours
LIT	6535	Major Authors	3 hours
CRW	5932	Teaching Creative Writing	3 hours

OPEN ELECTIVES

9 Semester Hours

Selected with approval of advisor.

MANUSCRIPT

A book-length manuscript (fiction, poetry, or other genre) of publishable quality, written and revised in three repeated classes (for 9 hours) of CRW 6009, Graduate Writing Workshop.

COMPREHENSIVE EXAMINATION

Total Minimum Semester Hours Required:

33

ENGLISH COURSES

- 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 5018 Literary Criticism** 3 cr (3,0)
Historical survey of major critics from classical antiquity to the modern era.
- ENG 5028 Rhetoric and Literature** 3 cr (3,0)
Investigates the development of written strategies of persuasion. Traces their relation to practical and imaginative literature. Applications to classroom teaching of literature and composition.
- ENL 5176 Restoration and 18th Century English Drama** 3 cr (3,0)
- ENL 5226 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 5236 The Age of Dryden and Pope** 3 cr (3,0)
Prose, poetry, drama and literary traditions of British neoclassicism.
- ENL 5335 Studies in Shakespeare** 3 cr (3,0)
Representative plays with emphasis on Shakespeare's development as an artist: aesthetics of dramatic literature.
- ENL 5347 The Age of Milton** 3 cr (3,0)
Emphasis on the non-dramatic works of John Milton. Selections from the non-dramatic works of other 17th Century figures.
- LAE 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 6367 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 6375 Practicum: The Teaching of Composition** 3 cr (3,0)
Close work with an experienced instructor in teaching an undergraduate composition course, combined with regular group meetings for discussion of problems of teaching composition.
- LIN 5137 Linguistics** 3 cr (3,0)
Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.
- LIN 6932 Problems in Linguistics** 3 cr (3,0)
PR: LIN 5137. Study of the application of linguistics to various aspects of teaching and communication.
- LIT 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 Brontes, 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 6535 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

Bruce F. Pauley Graduate Program Coordinator
Office: HFA 505B, Phone 275-2224

T. Colbourn, Ph.D. President and Professor
J. B. Fernandez, Ph.D. Professor
B. F. Pauley, Ph.D. Professor
J. H. Shofner, Ph.D. Chairman and Professor
P. W. Wehr, Ph.D. Professor
R. C. Crepeau, Ph.D. Associate Professor
J. L. Evans, Ph.D. Associate Professor
E. B. Fetscher, Ph.D. Associate Professor
E. F. Kallina, Jr., Ph.D. Associate Professor
T. D. Greenhaw, Ph.D. Assistant Professor
S. A. Leckie, 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 has two options: the thesis option and the nonthesis option. The program is aimed at providing for the academic growth of secondary school teachers, providing qualified teachers for community colleges, and contributing to the professional or personal enrichment of the students. Departmental areas of American-oriented research include European immigration, ethnic and racial minorities, popular culture and local history. Other fields include twentieth-century mass movements, Nazism and anti-Semitism in Central Europe, and English activities during the eighteenth century.

MASTER OF ARTS DEGREE REQUIREMENTS — HISTORY

Either option (thesis or nonthesis) requires 36 semester hours with no graduate credit given for any grade lower than "B." Specific requirements for each option are:

THESIS OPTION

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

NONTHESIS OPTION

HIS 6159	Historiography	3 hours
HIS 6946	Teaching Practicum	3 hours
Area of Concentration (American or European)		18 hours
Outside Area of Concentration		6-9 hours
Electives		3-6 hours

Total Minimum Semester Hours Required: 36

EXAMINATION REQUIREMENTS

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

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

HISTORY COURSES

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

AMH 5116 Colloquium in U.S. Colonial History	3 cr (3,0)
AMH 5137 Colloquium in U.S. Revolutionary Period Covers the years: 1763-1789.	3 cr (3,0)
AMH 5149 Colloquium in Early U.S. History, 1789-1815 Covers the early national period.	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 Covers topics of Southern history from colonial origins to the present.	3 cr (3,0)

AMH 5446 Colloquium in U.S. Frontier	3 cr (3,0)
AMH 5515 Colloquium in U.S. Diplomatic History	3 cr (3,0)
AMH 6117 Seminar in Colonial U.S. Covers years: 1492-1763.	3 cr (3,0)
AMH 6138 Seminar in American Revolution Covers years: 1763-1789.	3 cr (3,0)
AMH 6179 Seminar in the Civil War and Reconstruction Papers will be presented and defended in class.	3 cr (3,0)
AMH 6218 Seminar in Late 19th Century U.S. Covers selected topics on the farmer and labor movements and the growth of industrialization.	3 cr (3,0)
AMH 6356 Seminar in U.S. Politics Covers selected topics in American political history.	3 cr (3,0)
AMH 6393 Seminar in U.S. Cultural History	3 cr (3,0)
AMH 6408 Seminar in American South Papers will be presented and defended in class.	3 cr (3,0)
AMH 6447 Seminar in U.S. Frontier	3 cr (3,0)
AMH 6499 Seminar in Local History Supervised research and writing of term papers on selected topics in city, county and regional history.	3 cr (3,0)
AMH 6516 Seminar in U.S. Diplomatic History Covers years 1776 to the present.	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 Readings and discussion of important events in the history of Spain.	3 cr (3,0)
EUH 5517 Colloquium: Tudor-Stuart England	3 cr (3,0)
EUH 5527 Colloquium in 18th Century England Covers Hanoverian Britain.	3 cr (3,0)
EUH 5579 Colloquium in Soviet Russia Covers Russian history from 1911 to the present.	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 6248 Seminar in Fascist Dictators Compares the causes, characteristics and failures of fascist movements and dictators in Germany, Italy, Austria and other European countries from 1918-1945.	3 cr (3,0)
EUH 6288 Seminar in Europe after World War II	3 cr (3,0)
HIS 6159 Historiography Selected topics in the study of history. May be repeated for credit on consent of instructor.	3 cr (3,0)
HIS 6946 Teaching Practicum Student observation, participation, direction, and leadership in a college survey course.	3 cr (3,0)

LAH 5713 Colloquium in U.S.-Latin American Relations

3 cr (3,0)

The course will analyze U.S.-Latin American relations from an historical perspective. It will be presented through readings and discussion of selected materials.

LAH 6308 Seminar in 20th Century Latin American History

3 cr (3,0)

A seminar analyzing contemporary Latin American issues, such as militarism, revolutionary movements, social and economic reforms, from a historical perspective.

MATHEMATICAL SCIENCE

Larry C. AndrewsGraduate Program Coordinator
Office: CCII 259, Phone 275-2585

L. C. Andrews, Ph.D.	Professor
R. C. Brigham, Ph.D.	Professor
L. Debnath, Ph.D.	Chairman and Professor
A. J. Pettofrezzo, Ph.D.	Professor
H. Sherwood, Ph.D.	Professor
J. M. Anthony, Ph.D.	Associate Professor
L. H. Armstrong, Ph.D.	Associate Professor
M. N. Heinzer, Ph.D.	Associate Professor
R. N. Mohapatra, Ph.D.	Associate Professor
E. Norman, Ph.D.	Associate Professor
P. J. O'Hara, Ph.D.	Associate Professor
C. P. Rautenstrauch, Ph.D.	Associate Professor
G. D. Richardson, Ph.D.	Associate Professor
B. K. Shivamoggi, Ph.D.	Associate Professor
M. D. Taylor, Ph.D.	Associate Professor
M. P. Barr.....	Assistant Professor
R. M. Caron, Ph.D.	Assistant Professor
J. W. Hurst.....	Assistant Professor
R. C. Jones, Ph.D.	Assistant Professor
M. Z. Malik, Ph.D.	Assistant Professor
P. Mikusinski, Ph.D.	Assistant Professor
R. Rodriguez, Ph.D.	Assistant Professor
F. Salzmänn, Ph.D.	Assistant Professor
K. Vajravelu, Ph.D.	Assistant Professor

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), 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 postbaccalaureate status.

PROGRAM IN MATHEMATICAL SCIENCE

The Master of Science degree program in Mathematical Science is an interdisciplinary program intended to provide a broad base in applied mathematics, statistics, and computer science. 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 5405	Techniques of Complex Variables	3 hours
MAA 5210	Advanced Multivariable Calculus	4 hours
MAP 6407	Methods of Mathematical Analysis	4 hours

Suggested statistics courses (See Statistics Department):

STA 6447	Applied Probability	4 hours
STA 6354	Mathematical Statistics	4 hours

Suggested computer science courses (See Computer Science Department):

CNM 5142	Computational Methods/Linear Systems	3 hours
CNM 6144	Computational Methods/Analysis	3 hours

RESTRICTED ELECTIVES

1-4 Semester Hours

Electives may be chosen from approved mathematics, statistics or computer science courses which are taught by the Department of Mathematics, Department of Statistics or the Department of Computer Science. 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 Advanced Multivariable Calculus

4 cr (4,0)

PR: MAC 3313 or C.I. Differential and integral calculus of functions of several variables. Vector differential calculus. Two and three dimensional theory of vector integral calculus. Infinite series. Emphasis on applications.

MAA 5405 Techniques of 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.

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.

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 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 6407 Methods of Mathematical Analysis**4 cr (4,0)**

PR: MAA 5210 or C.I. Fourier series, linear operators, integral equations, eigenvalue problems, calculus of variations.

MAP 6424 Transform Methods**3 cr (3,0)**

PR: MAA 5405 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)**

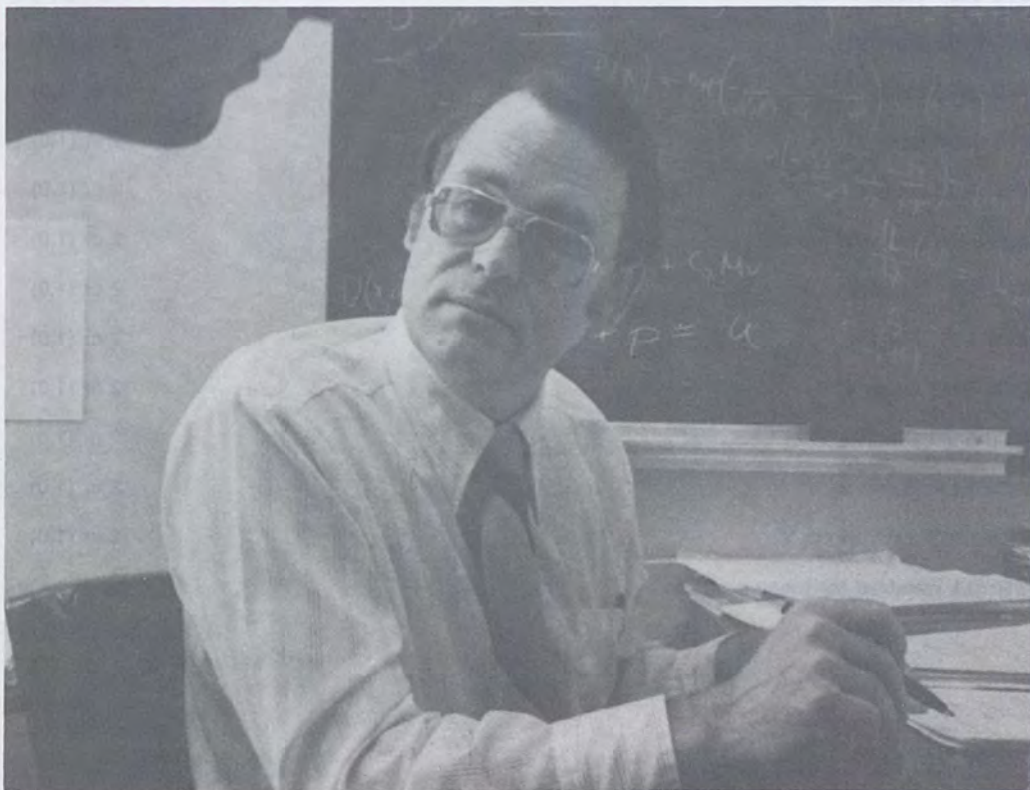
PR: MAA 4228 or MAA 5211 or C.I. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.

MHF 5306 Logic**3 cr (3,0)**

PR: COT 4001, MAC 3313, MAS 3103, or MAS 4301; or C.I. Propositional and predicate calculus, completeness, compactness, undecidability of arithmetic.

MHF 6325 Recursive Function Theory**3 cr (3,0)**

PR: COT 4001 or C.I. Primitive recursive functions, recursive functions, recursively enumerable sets and relations, Turing reducibility.



MUSIC

Bruce A. Whisler..... Department Chairman
Office: FA 105A, Phone 275-2869

MUSIC COURSES

MUT 5325 Arranging and Composing Music	2 cr (2,0)
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

Ralph A. Llewellyn Graduate Program Coordinator
Office: EN 310, Phone 275-2325

John J. Brennan, Ph.D. Professor
John R. Bolte, Ph.D. Associate Vice President of Academic Affairs
and Professor

Ralph A. Llewellyn, Ph.D. Professor

Jack H. Noon, Ph.D. Professor

William C. Oelfke, Ph.D. Acting Chairman and Professor

Jay S. Bolemon, Ph.D. Associate Professor

C. Denise Caldwell Assistant Professor

Lee Chow, Ph.D. Assistant Professor

Ataur R. Chowdhury Assistant Professor

Jeffrey C. Conn Visiting Assistant Professor

ADMISSION

The Graduate Record Examination (GRE) is required of all graduate students. Admission requirements 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. In addition, students entering the graduate program with regular status are expected to have completed the following undergraduate courses or their equivalent:

PHY 4043	Mechanics
PHY 3044	Electricity, Magnetism, and Electromagnetic Waves
PHY 3503	Thermodynamics
PHY 3101	Modern Physics
PHY 3722C	Physics of Scientific Instruments
PHY 4604	Wave Mechanics
COP 3215	Programming and Numerical Methods
MAP 3302	Differential Equations

Applicants not qualified for regular status may be initially admitted to post-baccalaureate status and later admitted to regular graduate status once the deficiencies have been made up.

PROGRAM IN PHYSICS

The Master of Science degree program in Physics has been developed to offer advanced research and instruction in a selection of physics specialties. Course work and research opportunities are available in optics, laser physics, quantum theory, electromagnetics, semiconductor physics, molecular physics, thin films, nonlinear phenomena, quantum-limited processes, and experimental gravitation. Currently, active research projects include nonlinear phenomena in intense electromagnetic fields, nonlinear wave propagation, ultra-high pressure diamond anvil research, Mossbauer spectroscopy, dye lasers, laser annealing, quantum non-demolition measurements, gravitational waves, variations in G, environmental physics, energy systems, and organic semiconductors. Many opportunities exist to interact with local optics, laser and solid state device, and other high technology industries. The basic curriculum is flexible enough to allow each student to tailor their program of study to meet their own specific professional interests and goals. The program is available in the evening hours to accommodate the working student.

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. 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	5528	Advanced Mechanics	
	or		
PHY	6246	Classical Mechanics	3 hours
PHY	5346	Electrodynamics I	3 hours
PHY	6347	Electrodynamics II	3 hours
PHY	5606	Quantum Mechanics	3 hours
PHY	6655	Applied Quantum Mechanics	3 hours
Electives			12 Hours

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

PHY	5445	Laser Physics
PHY	5404	Solid State Physics
PHY	5304	Nuclear Physics
PHY	5524	Statistical Physics
PHY	5505	Plasma Physics

A minimum of 3 semester hours must be selected from 5000- or 6000-level Engineering courses.

A minimum of 3 semester hours must be selected from 5000- or 6000-level Mathematics, Statistics, Computer Science, or Engineering Mathematics courses.

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
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PHYSICS COURSES

AST 5081C Astronomy for Teachers 1 cr (0.5,1.5)
PR: C.I. Elliptical orbits, binary stars, luminosity, doppler shift, spectroscopy and stellar evolution.

PHS 5404 Solid State Physics 3 cr (3,0)
PR: PHY 4045, PHY 3101 or C.I. Crystal lattice cell structure, phonons, free electron model, band theory of solids, Fermi surface, solid state applications.

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.

PHY 5228 Advanced Mechanics 3 cr (3,0)
PR: PHY 4043 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 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 5304 Nuclear Physics** 3 cr (3,0)
PR: PHY 4045 or C.I. Nuclear forces, structure, models, reactions, radioactivity, fission, fusion, strange particles.
- PHY 5346 Electrodynamics I** 3 cr (3,0)
PR: PHY 3044, MAP 3302, or C.I. Boundary value problems in electrostatics and magnetostatics. Maxwell's equations; EM fields in matter; wave generation and propagation; wave guides; and resonant cavities.
- PHY 5401C Optics for Teachers** 1 cr (0.5,1.5)
PR: C.I. Geometrical and physical optics, spectrometers and lasers.
- PHY 5446 Laser Physics** 3 cr (3,0)
PR: PHY 3101, MAP 3302. Introduction to quantum optics and lasers. Time independent Schrodinger equation, matrix formulation, optical resonators, laser oscillations, laser systems, stimulated Raman and Brillouin scattering.
- PHY 5500C Thermal Physics for Teachers** 1 cr (0.5,1.5)
PR: C.I. Engines, heat pumps, kinetic theory, phase changes, radiation, weather.
- PHY 5505 Plasma Physics** 3 cr (3,0)
PR: PHY 4043, 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.
- 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 5601 Quantum Physics for Teachers** 1 cr (1,0)
PR: C.I. hydrogen atom, diatomic molecules, heat capacity transition rates.
- PHY 5606 Quantum Mechanics** 3 cr (3,0)
PR: PHY 4045 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 perturbation theory.
- PHY 6246 Classical Mechanics** 3 cr (3,0)
PR: PHY 5228 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.
- PHY 6655 Applied Quantum Mechanics** 3 cr (3,0)
PR: PHY 5606 or C.I. Quantization of the electromagnetic field. Spontaneous and stimulated emission. Semiclassical laser theory.
- 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.

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.

PHZ 5800C Wave Motion for Teachers

1 cr (0.5,1.5)

PR: C.I. Water waves, waves on strings, sound and vibrations.

POLITICAL SCIENCE

M. Elliot Vittes.....Graduate Program Coordinator
Office: HFA 425, Phone 275-2608

R. Handberg, Ph.D......Associate Dean of Graduate Studies and Professor
H. Kennedy, Ph.D......Professor
M. Stern, Ph.D......Professor
R. Bledsoe, Ph.D......Associate Professor
J. R. Lilie, Ph.D......Chairman and Associate Professor
S. A. Lilie, Ph.D......Associate Professor
W. Q. Morales, Ph.D......Associate Professor
P. H. Pollock, Ph.D......Associate Professor
D. L. Davison, Ph. D......Assistant Professor
J. Johnson-Freese, Ph.D......Assistant Professor
B. A. Perry, Ph.D......Assistant Professor
M. E. Vittes, Ph.D......Assistant Professor

ADMISSION

Minimum admission requirements are:

- a. Submission of a quantitative-verbal score of at least 1000 on the General (Aptitude) test of the Graduate Record Examination (GRE) or a 3.0 average in an undergraduate major in political science or a related discipline (subject to approval of the department).
NOTE: A student must take the GRE, even if his undergraduate GPA is above a 3.0.
- b. Submission of three letters of recommendation to the program coordinator from individuals capable of assessing the applicant's ability to undertake graduate work successfully.

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

PROGRAM IN POLITICAL SCIENCE

The Master of Arts in Political Science degree program is structured to meet a wide range of student needs. These include: (1) preparation to enter positions in government and the private sector in which the ability to comprehend, influence, and respond to government policy is critical; (2) familiarity with research tools that help to understand and analyze government policies, public opinion, and important public and private issues; (3) provision of education for secondary school teachers seeking higher degrees, and teachers in community colleges; and (4) preparing students, through the M.A., for pursuit of a Ph.D. degree in Political Science at other institutions.

**MASTER OF ARTS DEGREE REQUIREMENTS —
POLITICAL SCIENCE**

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

REQUIRED COURSES

		6 Semester Hours
POS 6734	Research Methods	3 hours
POS 6746	Quantitative Methods	3 hours

RESTRICTED ELECTIVES

12 Semester Hours

Completion of at least four of the following seminars is required:

CPO 6007	Seminar in Comparative Politics	3 hours
INR 6007	Seminar in International Politics	3 hours
POS 6045	Seminar in American National Politics	3 hours
POS 6197	Seminar in Subnational Politics	3 hours
POS 6207	Seminar in Political Behavior	3 hours
POT 6007	Seminar in Political Theory	3 hours
PUP 6007	Seminar in Public Policy	3 hours

ADDITIONAL ELECTIVES

6 Semester Hours

May be taken in either Political Science or a cognate area.

THESIS OR NONTHESIS OPTIONS

Students seeking to use this degree to enter community college teaching or to pursue a doctorate at a later time are strongly urged to choose the thesis track.

Thesis Option

6 Semester Hours

Complete a thesis (POS 6971) for 6 hours credit on a topic acceptable to the directing professor and committee.

Nonthesis Option

9 Semester Hours

Complete nine additional hours. Three of these hours must be in Political Science; the remaining six hours may be in a cognate area.

EXAMINATION

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

Total Minimum Thesis Option Hours Required: 30

Total Minimum Nonthesis Option Hours Required: 33

POLITICAL SCIENCE COURSES

CPO 6004 Issues in Comparative Politics

3 cr (3,0)

PR: C.I. Analysis of contemporary problems and issues of comparative politics such as political economy, development, authority patterns, and instability.

CPO 6007 Seminar in Comparative Politics

3 cr (3,0)

PR: C.I. 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 6045 Seminar in American National Politics

3 cr (3,0)

Examines the operation of U. S. national political institutions by focusing on elements of the system, such as judicial process or interactions between branches of government.

POS 6127 Issues in State Public Policy

3 cr (3,0)

PR: C.I. Analysis of policy issues occurring in the American states with attention given to a single state and comparative studies.

POS 6157 Issues in Urban Public Policy

3 cr (3,0)

PR: C.I. Study of characteristic policy issues which arise in urban political systems, and of various public responses to those issues.

- POS 6197 Seminar in Subnational Politics** **3 cr (3,0)**
Examination of regional, state, and local politics, including the nature and structure of federalism, and government institutions, and the development of political and economic relationships.
- POS 6207 Seminar in Political Behavior** **3 cr (3,0)**
A review of theory and findings in regard to mass political behavior, including participation attitudes, communication, and electoral behavior.
- POS 6237 Public Opinion and Policy Formation** **3 cr (3,0)**
PR: C.I. A substantive and theoretical approach to understanding relationships between public opinion and public policy, including opinion/linkage models as well as opinion measurement.
- POS 6734 Research Methods** **3 cr (3,0)**
Methods of research design and execution, including both conceptualization and data gathering.
- POS 6746 Quantitative Methods** **3 cr (3,0)**
PR: POS 6734 or C.I. Applications and analysis of problems in the use of statistical data. Emphasis on methods of analysis.
- POS 6918 Directed Independent Research** **Variable Credit**
- POS 6938 Special Topics/Seminars** **3 cr (3,0)**
This course title covers all special topics courses which are not listed in the catalog with a course number. May be repeated for credit.
- POS 6946 Supervised Teaching Internship** **Variable 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 Seminar in Public Policy** **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 policy.
- PUP 6057 Issues in National Public Policy** **3 cr (3,0)**
PR: C.I. Study of the establishment and evaluation of selected national issues and priorities, means of implementation, and impacts of government programs.
- PUP 6058 Issues in International Public Policy** **3 cr (3,0)**
PR: C.I. Analysis of domestic and foreign inputs influencing foreign policy formulation and execution, with extended analysis devoted to executive structures and decision making behavior.

PSYCHOLOGY

John M. McGuire.....Graduate Program Coordinator
Office: PH 322, Phone 275-2216 Clinical Psychology Program

Wayne A. Burroughs.....Graduate Program Coordinator
Office: PH 313, Phone 275-2216 Industrial/Organizational Program

D. W. Abbott, Ph.D. Professor
W. A. Burroughs, Ph.D. Professor
R. E. Connally, Ph.D. Professor
J. M. McGuire, Ph.D. Professor
J. B. Rollins, Ph.D. Dean and Professor
M. H. Thomas, Ph.D. Professor
B. I. Blau, Ph.D. Associate Professor
J. C. Brophy, Ph.D. Associate Professor
R. D. Fisher, Ph.D. Associate Professor
E. C. Shirkey, Ph.D. Associate Professor
P. M. Tell, Ph.D. Associate Professor
R. D. Tucker, Ph.D. Chairman and Associate Professor
D. E. Scott Burr, Ph.D. Assistant Professor
S. S. Guest-Houston, Ph.D. Assistant Professor
J. J. Turnage, 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 one from an academic source) must be initiated by the student and sent by the reference directly to the department. A departmental admissions committee reviews the student's credentials and notifies the student of its decision. Admission to the programs occurs only in the fall semester.

A completed file, which includes the application, official test scores, letters of reference, and transcripts to date, are due in the department by April 1. 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 either have a baccalaureate degree with a major in Psychology or a baccalaureate degree and completion of the following undergraduate psychology content course areas prior to matriculation: Abnormal Psychology; Developmental Psychology (Life Span preferred) or Child Psychology; Personality Theories; Learning; and a course in Statistics.

Industrial/Organizational Program. Applicants must either have a baccalaureate degree with a major in Psychology or a baccalaureate degree and completion of the following undergraduate psychology content course areas prior to matriculation: Learning, Social Psychology, Personality Theory, and two additional psychology core courses. All students are required to have a course in statistics and are strongly recommended to have a course in testing.

PROGRAMS IN PSYCHOLOGY

There are two different Master of Science programs in Psychology.
The Master of Science degree program in Clinical Psychology is concerned with the application of psychological principles to individuals. Major areas of emphasis include psychological assessment or evaluation skills, intervention or counseling and psychotherapy skills, plus an academic foundation in research methods. The program was initiated for the

purpose of providing training and preparation at the master's level for individuals desiring to deliver psychological services through community agencies. Clinical psychologists are involved in mental health rehabilitation through individual, marital, family and group psychotherapy, as well as crisis intervention and specialized therapeutic procedures. Psycho-diagnosis, consultation, education and administration are also roles frequently assumed by the clinical psychologist.

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

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

MASTER OF SCIENCE DEGREE REQUIREMENTS — CLINICAL PSYCHOLOGY

The 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 46 semester hours of work as follows:

ACADEMIC COURSE WORK			27 Semester Hours
CLP 6441	Psychological Assessment I*		3 hours
CLP 6445	Psychological Assessment II*		3 hours
CLP 6456	Clinical Intervention I*		3 hours
CLP 6457	Clinical Intervention II*		3 hours
CLP 6458	Clinical Intervention III*		3 hours
CLP 6459	Clinical Intervention IV*		3 hours
CLP 6932	Ethical and Professional Issues in Clinical Psychology		2 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 PSY 6946.			

LABS			6 Semester Hours
Must coregister for one hour with each course as shown above.			
PSY 6946	Psychology Lab		1 hour

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

THESIS OR RESEARCH REPORT			6 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:	46
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QUALIFYING EXAMINATION

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

CLINICAL INTERNSHIP REQUIREMENT

The purpose of the internship requirement is to provide the M.S. candidate in Clinical Psychology with a comprehensive, practically-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. 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.

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. The program consists of a minimum of 40 semester hours of work as follows:

INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

ACADEMIC CLASS WORK

			6 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

THESIS

			8 Semester Hours
PSY	6971	Thesis	8 hours

Total Minimum Semester Hours Required: 40

QUALIFYING EXAMINATIONS

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

PRACTICA

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

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

For each practicum a meeting is held between the student, the supervising faculty member, and a representative of the organization in which the work will be accomplished. Behavioral objectives are agreed upon, and it is expected that the student will carry out these objectives during the assigned time.

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

Full-time students are typically assigned practica projects for the fall and spring terms of their second year.

RESEARCH REPORT OR THESIS

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

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 Psychological Assessment I*

3 cr (2,2)

PR: Graduate admission and C.I. Theories and techniques of psychological assessment with primary emphasis on intellectual assessment, interviewing skills and report writing.

CLP 6445 Psychological Assessment II*

3 cr (2,2)

PR: CLP 6441, Graduate admission and C.I. Theories and techniques of psychological assessment with primary emphasis on objective and projective techniques of personality assessment, interviewing skills and report writing.

CLP 6456 Clinical Intervention I*

3 cr (2,2)

PR: Graduate admission and C.I. Introduction to Counseling Theory. Experiential Laboratory.

CLP 6457 Clinical Intervention II*

3 cr (2,2)

PR: CLP 6456, Graduate admission and C.I. Group counseling: Theory and Process. Experiential Group Laboratory.

CLP 6458 Clinical Intervention III*

3 cr (2,2)

PR: CLP 6456, CLP 6457, Graduate admission and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique.

- CLP 6459 Clinical Intervention IV*** **3 cr (2,2)**
PR: CLP 6441, 6445, 6456, 6457, 6458, graduate admission and C.I. Survey of theory and techniques in crisis intervention, family therapy, couples therapy, and sex therapy.
- CLP 6932 Ethical and Professional Issues in Clinical Psychology** **2 cr (2,0)**
PR: Graduate admission, C.I. and Internship. Examination of APA Code of Ethics as applied to clinical situations. Topics include confidentiality, commitment procedures, licensing laws.
- CYP 6948 Psychology Internship** **2-4 cr (2,20)**
PR: Graduate admission, 2nd year status and C.I. Supervised placement in community setting for 8-20 hours per week. (May be repeated for credit.)
- 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.
- INP 6215 Assessment Centers and Leadership** **3 cr (3,0)**
PR: Graduate admission and C.I. Survey of assessment center technology and application and of leadership theory and practice.
- INP 6317 Organizational Psychology and Motivation** **3 cr (3,0)**
PR: Graduate admission and C.I. Review of theories, research and application of psychological principles to organizational settings and human motivation.
- INP 6605 Training and Performance Appraisal** **3 cr (3,0)**
PR: Graduate admission and C.I. Survey of theories, research and practice in the areas of industrial/organizational training and performance appraisal.
- INP 6939 Current Topics and Applied Problems in Industrial/Organizational Psychology** **3 cr (3,0)**
PR: Graduate admission and C.I. Survey of current topics in Industrial/Organizational psychology with emphasis on applied problems.
- INP 6946 Industrial Psychology Practicum I** **3 cr (1,6)**
PR: Graduate admission and C.I. Supervised placement in setting.
- INP 6947 Industrial Psychology Practicum II** **3 cr (3,0)**
PR: Graduate admission and C.I. Supervised research in industry. (May be repeated for credit.)
- 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 6938 Research Planning** **1 cr (0,0)**

PSY 6909 Research Report	1-3 cr (0,0)
PSY 6946 Psychology Lab	1 cr (0,1)
PR: Graduate admission and C.I. Supervised practice in assessment and/or intervention techniques. (Will be repeated for credit.)	
PSY 6971 Thesis	1-8 cr (0,0)
*Must coregister for the appropriate section of PSY 6946.	

PUBLIC ADMINISTRATION

<i>Gerard J. Kimmitt</i>	Graduate Program Coordinator
Office: PH 336, Phone 275-2603	
<i>R. A. Shapek, Ph.D.</i>	Chair and Professor
<i>P. W. Colby, Ph.D.</i>	Associate Professor
<i>G. J. Kimmitt, Ph.D.</i>	Assistant Professor
<i>W. C. Lawther, Ph.D.</i>	Assistant Professor

ADMISSION

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

An undergraduate degree in Public Administration or Political Science is desirable. Individuals with strong backgrounds in other disciplines may be admitted to the program. Students whose native language is other than English are required to have a course in American National Government and a minimum TOEFL score of 550.

PROGRAM IN PUBLIC ADMINISTRATION

The Department of Public Service Administration offers graduate work leading to the Master of Public Administration degree. This program offers a flexible course of study which prepares students for positions as administrators in various modes of public service and administration. The program offers an opportunity for students to acquire knowledge and to master techniques essential to the design, implementation, administration, and evaluation of agencies and programs at all levels of government.

MASTER OF PUBLIC ADMINISTRATION DEGREE REQUIREMENTS

The student must complete a basic core program of 24 hours. Upon completion of the core, a student may elect to specialize in a particular cognate area or complete a generalist administration program. The program of study is developed in consultation with the coordinator of the program. A minimum of three courses must be completed for a cognate field, whether in the department or outside the department. The student may elect to complete a four-credit Research Report or take two additional courses within the department.

The total number of hours needed to complete the program varies from a minimum of 37 hours to a maximum of 44 hours.

MINIMUM CORE REQUIREMENTS		24 Semester Hours
Administration and Policy		
PAD 6053	Principles of Public Administration	4 hours
Analytic Tools		
PAD 6700	Analytical Techniques for Public Administrators I	4 hours
PAD 6701	Analytical Techniques for Public Administrators II	4 hours
Public Management Skills		
PAD 6037	Public Organization Management	4 hours
PAD 6227	Public Budgeting	4 hours
PAD 6417	Human Resource Management	4 hours

SPECIAL SKILL OR COGNATE AREA

Variable (9 hour minimum)

A minimum of three courses which concentrate on a specific skill area germane to the practice of public administration may be drawn from other departments.

RESEARCH REPORT

4 Semester Hours

Four semester hours of credit must be earned for an investigatory research project that results in a research report acceptable to the department's graduate committee.

EXAMINATION

A comprehensive written examination covering the required core courses will be administered upon completion of the 24-hour core component. The Research Report may not be started until the comprehensive examination is completed. The examination may be taken a maximum of two times.

Total Minimum Research Report Option Hours Required: 37

Total Minimum Nonresearch Report Option Hours Required: 41

PUBLIC ADMINISTRATION COURSES

CCJ 5485 Issues in Justice Policy

4 cr (4,0)

Examination of selected issues of public policy regarding the functions and roles of criminal justice agencies vis-a-vis other government departments or agencies and public purposes.

LEA 5801 Administrative Law

4 cr (4,0)

The law regarding government administrative agencies with emphasis on the administrative process, the administrative procedure act, and special problems of state administrative law.

PAD 5041 Ethics and Values in Public Administration

4 cr (4,0)

Examination of the issues of ethics in the public sector—basis for public concern, past practice, present patterns of response; individual/social aspects of ethical behavior.

PAD 5335 Strategic Planning and Growth Management

4 cr (4,0)

Development and utilization of demographic, economic, and geographic information systems; strategic planning concepts as basis for management control in an urban environment.

PAD 5424 Labor Relations in the Public Sector

4 cr (4,0)

A study of current trends and developments in employment relations in the public sector, especially employee organization, negotiations, and the collective bargaining process.

PAD 5806 Local Government Operations

4 cr (4,0)

Operational functions of municipal and county governments and the role of the chief executive officer.

PAD 5807 Administrative Practice in the Public Sector

4 cr (4,0)

The application of various theoretical concepts to the real world of public administration. Policy formulation and execution is examined through the case study model.

PAD 6037 Public Organization Management

4 cr (4,0)

Structure, functioning, and performance of public organizations and behavior of individuals and groups, application for public management.

PAD 6053 Principles of Public Administration

4 cr (4,0)

This course is designed as a graduate level survey course in Public Administration. Attention will be directed toward basic concepts and theoretical approaches in the literature.

PAD 6227 Public Budgeting

4 cr (4,0)

Budgets as planning programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS, ZBB and incrementalism.

PAD 6307 Policy Implementation

4 cr (4,0)

Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.

PAD 6327 Public Program Evaluation Techniques

4 cr (4,0)

An in-depth examination of the techniques and skills utilized in the evaluation of public programs.

PAD 6417 Human Resource Management

4 cr (4,0)

The administrator as manager and motivator of public employees with particular emphasis upon organizational behavior and contemporary public service legislation.

PAD 6700 Analytical 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 public sector. Practical use of computers in policy and decisions.

PAD 6716 MIS for Public Managers

4 cr (4,0)

PR: Completion of PAD 6700 and PAD 6701. Use of systems concept and computers in contemporary public sector management information systems.

PAD 6934 Issues in Public Administration

4 cr (4,0)

PR: C.I. Analysis of both substantive and theoretical issues confronting the broad spectrum of contemporary public administration. May be repeated for credit.



SOCIOLOGY, APPLIED

Ida J. Cook.....Graduate Program Coordinator
Office: FA 402, Phone 275-2227

W. D. Allen, Ph.D..... Professor
W. R. Brown, Ph.D..... Professor
D. A. Fabianic, Ph.D..... Chairman and Professor
C. M. Unkovic, Ph.D..... Professor
I. J. Cook, Ph.D..... Associate Professor
D. R. Dees, Ph.D..... Associate Professor
J. E. Hodgin, Ph.D..... Associate Professor
J. C. Bridges, Ph.D..... Assistant Professor
R. S. Miller, Ph.D..... Assistant Professor

ADMISSION

In addition to the standard admission criteria to Graduate Studies, the Department requires complete transcripts of past university/college work and three letters of reference including at least one from an academic source familiar with the applicant's abilities. The Graduate Record Examination (GRE) scores should be no more than seven years old.
Before a student can be admitted to the program, the following requirements must be met: successful completion ("C" or better) of undergraduate courses in sociological theory and statistics.

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 postbaccalaureate student and acceptance into this degree-granting program. Consult the program coordinator whenever questions arise.

PROGRAM IN APPLIED SOCIOLOGY

The Department of Sociology and Anthropology offers graduate work leading to a degree in a Master of Arts in Applied Sociology. The purpose of this graduate program is to prepare students to effectively apply sociological knowledge, principles, techniques, and research skills in a variety of settings. The curriculum is designed to educate students in techniques of analysis and evaluation of organizational, human and policy problems, and in the application of this body of knowledge to practical settings.
Examples of competencies in applied sociology include effective skills in conceptualization of human and organization problems, resolution of human relations problems, communication skills, program design and evaluation, planning, feasibility and needs assessment studies, the application of general systems theory to organizational problems, community development and planned change, social research, data management, and data analysis and presentation.

MASTER OF ARTS DEGREE REQUIREMENTS —
APPLIED SOCIOLOGY

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

REQUIRED COURSES		15 Semester Hours
SYA 6305	Social Research	3 Hours
SYA 6455	Research Analysis	3 Hours
SYA 6656	Social Organization and Human Resources	3 Hours
SYA 6657	Program Design and Development	3 Hours
SYA 6658	Community Development and Planned Change	3 Hours

NONRESTRICTED ELECTIVES

9 Semester Hours

A student will select 9 or more hours of nonrestricted course work in consultation with his advisor.

PRACTICUM of actual field experience is required.

Minimum of 8 Hours

THESIS based on actual field experience is required.

Minimum of 4 Hours

EXAMINATION REQUIREMENTS

Mandatory requirements include a comprehensive written examination over required courses and assigned readings and an oral defense of the thesis. An oral examination over a required course(s) is required if the student receives a low pass on that core area (or areas).

Total Minimum Semester Hours Required:

36

APPLIED SOCIOLOGY COURSES

ANT 5479 Comparative Cultural Analysis

3 cr (3,0)

The dynamics of cultural processes in a multi-ethnic setting

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, and C.I. Develop competence in data management, selection of statistics for data analysis, computer user skills, evaluation analysis and data presentation.

SYA 6656 Social Organization and Human Resources

3 cr (3,0)

PR: C.I. Complex organization theory and practice; techniques of social systems analysis and evaluation; competence in group dynamic skills and the use of human resources.

SYA 6657 Program Design and Development

3 cr (3,0)

PR: C.I. Techniques of system and policy assessment, evaluation and design. Presentation of alternative approaches to design and facilitation of client-provider relationships.

SYA 6658 Community Development and Planned Change

3 cr (3,0)

PR: C.I. The study of organizations, policies, structures, and processes of communities, neighborhoods and small groups. Strategies of directed change.

STATISTICAL COMPUTING

Paul N. Somerville Graduate Program Coordinator
Office: BL 304, phone 275-2695

A. M. Dutton, Ph.D. Professor
B. Ostle, Ph.D. Professor
P. N. Somerville, Ph.D. Professor
L. A. Franklin, Ph.D. Associate Professor
L. C. Malone, Ph.D. Associate Professor
Fah F. Gan, Ph.D. Assistant Professor
Dale F. Kraemer, Ph.D. Assistant Professor
J. R. Schott, Ph.D. Assistant Professor

ADMISSION

Admission requirements are the standard University criteria of a 3.0 grade point average (GPA) for the last 60 semester hours of credit earned towards the baccalaureate or a Graduate Record Examination (GRE) score of at least 1000 for the combined verbal-quantitative sections of the General (Aptitude) Test. The GRE must be less than 5 years old. To be admitted to the M.S. program in Statistical Computing with regular graduate status, it is desirable that the student should have completed the following courses or their equivalents: CNM 4110, COP 2511, MAC 3313, MAS 3113 (or MAS 3103), STA 4164, STA 4322. Those students who find they are not adequately prepared in these areas may select appropriate courses from the undergraduate curriculum to make up such deficiencies. The student must have completed CNM 4110 and STA 4322, or their equivalents, before the M.S. degree will be granted (STA 6354 may be substituted for STA 4322). With approval of the student's committee, up to 6 hours of 4000 level courses may be counted toward the degree. Applicants not qualified for regular status may be initially admitted to the University in a postbaccalaureate status.

PROGRAM IN STATISTICAL COMPUTING

The Master of Science degree program in Statistical Computing is an innovative program with emphasis on the use, adaptation or development of statistical methods using state-of-the-art computer technology in the analysis of data from problems in all fields of study.

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.

All graduate courses are offered during the 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 30 credit hours, with a minimum of 24 hours of graduate-level course work.

REQUIRED COURSES:

9 Semester Hours

STA 6106	Statistical Computing	3 hours
STA 6236	Regression Analysis	3 hours
STA 6246	Linear Models	3 hours

ELECTIVES

15-19 Semester Hours

Other courses will be selected by the student in consultation with his advisor, subject to the approval of the student's graduate committee. These courses will ordinarily be tailored to meet the objectives of the student. For example, those students planning further graduate work might include MAA 5211, Advanced Multivariable Calculus; STA 6354, Theory of Statistics; and STA 6447, Applied Probability. A student with strong interests in Computer Science might include CNM 5412, Computational Methods/Linear Systems, and CNM 6144, Computational Methods/Analysis I. Students with interests in applied areas such as Biostatistics, Econometrics, or Quality Assurance might include appropriate courses from the Colleges of Health, Business Administration, or Engineering.

THESIS OR RESEARCH REPORT

2-6 Semester Hours

Ordinarily a report which is of sufficient magnitude to justify awarding more than 4 hours of credit is considered a thesis. Otherwise it is a research report.

An oral defense of the thesis will be required of those students who elect to write a thesis

EXAMINATION REQUIREMENTS

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

Total Minimum Semester Hours Required:

30

STATISTICS COURSES

STA 5156 Probability and Statistics for Engineers

4 cr (4,0)

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 and Response Surface Methodology

3 cr (3,0)

PR: STA 4164 or STA 5206. Construction and analysis of designs for experimental investigations. Concepts of blocking, randomization, and replication. Confounding in factorial experiments, incomplete block designs. Response surface methodology.

STA 5206 Statistical Analysis

4 cr (4,0)

PR: One course in statistics; 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 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 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 3113, 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 6354 Theory of Statistics**4 cr (4,0)**

PR: STA 6447 or STA 4322. General theory of estimation and hypothesis testing; distribution theory; method of moments; maximum likelihood; analysis of variance; regression.

STA 6447 Applied Probability**4 cr (4,0)**

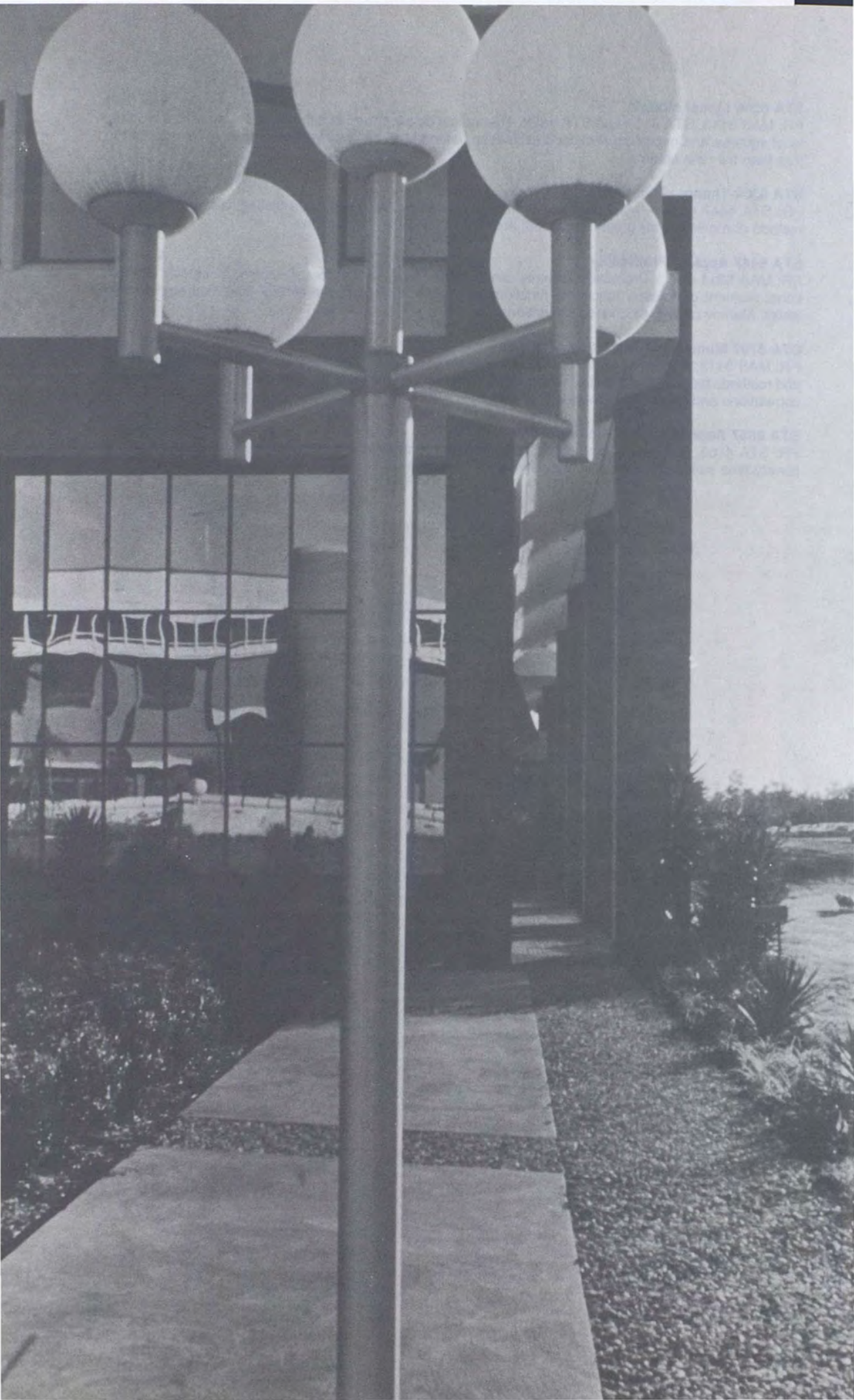
PR: MAA 5211 or C.I. Probability axioms, combinatorial analysis, random variables, probability distributions, moment generating functions, functions of random variables, the central limit theorem, random walks, Markov chains. stochastic simulation.

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

PR: MAS 3113, STA 4163 and STA 4321. 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 4163. Stationarity, autocorrelation, moving averages and autoregressive processes. Non-stationary time series. Identification and estimation. Forecasting.



COLLEGE OF BUSINESS ADMINISTRATION

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

COLLEGE ADMINISTRATION

C.L. Eubanks..... Dean
W. W. Reiff..... Acting Associate Dean
W.R. Kilbride..... Assistant Dean

W. R. Kilbride.....Graduate Program Coordinator
Office: PH 203, Phone 275-2184

Faculty

School of Accounting

H.R. Anderson, Ph.D..... Director and Professor
C.G. Avery, Ph.D..... Professor
D.D. Bandy, Ph.D..... Knights' Professor of Taxation
T.L. Campbell, D.B.A. Associate Professor
W.L. Johnson, Ph.D. Associate Professor
T.E. Phillips, Ph.D. Associate Professor
J.H. Salter III, Ph.D. Associate Professor
L.J. Savage, Ph.D. Associate Professor
R.B. Welker, D.B.A. Associate Professor
M. Alidina, Ph.D. Assistant Professor
S.P. Danese, Ph.D. Assistant Professor
P.R. Grierson, Ph.D. Assistant Professor
C.F. Kelliher, D.B.A. Assistant Professor
N. Klintworth, J.D. Assistant Professor
D.L. Welker, Ph.D. Assistant Professor

Economics

F.A. Raffa, Ph.D..... Professor
B.A. Rungeling, Ph.D. Chairman and Professor
R.G. Fritz, Ph.D. Associate Professor
R.L. Pennington, Ph.D. Associate Professor
K.R. White, Ph.D. Associate Professor
J.A. Xander, Ph.D. Associate Professor
B. Braun, Ph.D. Assistant Professor
A.E. Day, Ph.D. Assistant Professor
D.A. Hosni, Ph.D. Assistant Professor
W.W. McHone, Ph.D. Assistant Professor
T.L. Martin, Ph.D. Assistant Professor
G.P. Penland, Ph.D. Assistant Professor

Finance

<i>D.R. Klock, Ph.D.</i>	Chairman and Professor
<i>W.W. Reiff, D.B.A.</i>	Professor
<i>D.F. Scott, Jr., Ph.D.</i>	Phillips-Schenk Chair in American Free Enterprise and Professor
<i>J.M. Cheney, Ph.D.</i>	Associate Professor
<i>R.P. DeWitt, Ph.D.</i>	Associate Professor
<i>N.K. Modani, Ph.D.</i>	Associate Professor
<i>E.T. Veit, Ph.D.</i>	Associate Professor
<i>W.C. Weaver, Ph.D.</i>	Associate Professor
<i>S.M. Atkinson, D.B.A.</i>	Assistant Professor
<i>S. Graham, Ph.D.</i>	Assistant Professor
<i>J. Madura, D.B.A.</i>	Assistant Professor
<i>A.D. Neustel, Ph.D.</i>	Assistant Professor

Hospitality Management

<i>A. Pizam, Ph.D.</i>	Chairman and Professor
<i>V. Chandrasekar</i>	Assistant Professor
<i>A.C. McCool, Ed.D.</i>	Assistant Professor

Management

<i>N.W. Comish, Ph.D.</i>	Professor
<i>C.L. Eubanks, Ph.D.</i>	Dean and Professor
<i>H. R. Jones, Ph.D.</i>	Chairman and Professor
<i>W. Berry, Ph.D.</i>	Associate Professor
<i>W.A. Bogumil Jr., Ph.D.</i>	Associate Professor
<i>W.G. Callarman, D.B.A.</i>	Associate Professor
<i>S. Goodman, Ph.D.</i>	Associate Professor
<i>R.L. Martin, Ph.D.</i>	Associate Professor
<i>W.W. McCartney, Ph.D.</i>	Associate Professor
<i>H.R. Souder, Ph.D.</i>	Associate Professor
<i>G.E. Stevens, D.B.A.</i>	Associate Professor
<i>P.M. Fandt, MBA</i>	Assistant Professor
<i>L.W. Fernald, Jr., D.B.A.</i>	Assistant Professor
<i>P.S. Lewis</i>	Assistant Professor
<i>W.D. Richardson</i>	Assistant Professor
<i>C.D. Schou, Ph.D.</i>	Assistant Professor

Marketing

<i>P.L. Gillett, Ph.D.</i>	Professor
<i>G.W. Paul, Ph.D.</i>	Professor
<i>R.S. Rubin, Ph.D.</i>	Interim Chairman and Professor
<i>E.E. Teeple, Ph.D.</i>	Professor
<i>D.L. Davis, D.B.A.</i>	Associate Professor
<i>D.A. Fuller, Ph.D.</i>	Associate Professor
<i>L.P. Jarvis, Ph.D.</i>	Associate Professor
<i>H.A. Conley, D.B.A.</i>	Assistant Professor
<i>M.L. Joyce, D.B.A.</i>	Assistant Professor
<i>M.H. Morris, Ph.D.</i>	Assistant Professor

ADMISSION

Admission to graduate study in the College of Business Administration is open to individuals with a baccalaureate degree in any discipline from a regionally accredited college or university. No previous training in business or economics is required as a prerequisite for graduate status. Thus, all graduate programs are open to graduates in education, engineering, arts, sciences, and other fields as well as business.

Admission is granted to individuals showing high promise of success in post-graduate studies. Various measures of high promise are used, including academic achievement as an upper division undergraduate student and performance on the Graduate Management

Admissions Test (GMAT). For the M.A. degree in Applied Economics only, scores on either the Graduate Record Exam (GRE) or GMAT may be submitted.

The average grade point average for students entering the graduate business programs during the most recent academic year was 3.2. The average GMAT score for the same group was at the 70th percentile. Other indicators of promise may include the applicant's extra curricular 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) for further consideration.

Enrollment in graduate courses in the College of Business Administration is limited to students who have been accepted and classified with regular graduate status in the M.B.A. program, M.S. in Accounting or the M.A. in Applied Economics, and to other students with regular graduate status elsewhere in the University. Students holding postbaccalaureate status are not permitted to enroll in graduate business courses.

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.

Unless there is a completed file by no later than three weeks before the beginning of classes, the College of Business Administration will not grant admission for that semester.

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 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 the Master of Science in Accounting program must achieve a minimum grade of "C" in all accounting foundation core courses.



MASTER OF BUSINESS ADMINISTRATION

Program Advisor: W. R. Kilbride, PH 203, Phone 275-2184

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

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

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

MASTER OF BUSINESS ADMINISTRATION — DEGREE REQUIREMENTS

Normally, the 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 to one calendar year of full-time study. The curriculum consists of two parts, a foundation core and a professional core.

The foundation core is defined by the course requirements listed below, and its completion is a prerequisite to entering the professional core. Note that all or part of the foundation 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

30 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 5051	Management Concepts	2 hours
MAN 5501	Introduction to Production/Operations Management	2 hours
MAN 5830	Introduction to Management Information Systems	2 hours
MAR 5055	Marketing Concepts	3 hours

The professional core consists of 24 credit hours of advanced course work that substantially extends and applies knowledge developed in the foundation core. 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, or marketing.

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 6206	Organizational Behavior and Development	3 hours
MAN 6721	Business Policy and Responsibility	3 hours
MAN 6814	Quantitative Models for Business Decisions	3 hours
MAR 6716	Marketing Policy	3 hours

ELECTIVES

9 Semester Hours

Electives may be taken in accounting, economics, finance, marketing or management. An 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 12 semester hours in Accounting.

EXAMINATION

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

Total Minimum Semester Hours Required:

33-63

MASTER OF SCIENCE IN ACCOUNTING

Program Advisor: T. E. Phillips, PH 417, Phone 275-2322 or 275-2463

The Master of Science degree in Accounting 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 degree in Accounting is awarded upon satisfactory completion of a graduate program of 33 semester hours. At least 15 of the 33 hours must be made up of ACG 6000 level courses. Students, with the assistance and approval of an advisor, may select an area of specialization in Management, Public, Tax, General, or Not-for-Profit Accounting. Required courses and restricted electives are listed below.

MASTER OF SCIENCE IN ACCOUNTING — DEGREE REQUIREMENTS

REQUIRED COURSES

18 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
ACG 6806	Seminar in Professional Accounting Issues	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 6895	Professional Accounting Practice	3 hours
ACG 6697	Seminar in Auditing for Governmental and Nonprofit 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 6206	Organizational Behavior and Development	3 hours
MAN 6814	Quantitative Models for Business Decisions	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	Seminar in Accounting Control Systems	3 hours
ACG 5506	Managerial Accounting for Governmental and Nonprofit Organizations	3 hours
ACG 5625	Auditing and EDP	3 hours
ACG 5675	Operational Auditing	3 hours

FOUNDATION CORE

84 Semester Hours

The Courses in the foundation core for this program are usually satisfied if a person enters the MSA 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 3401	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
ACG 5005*	Financial Accounting Concepts	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
ENC 1101	Composition I	3 hours
ENC 1102	Composition II	3 hours
FIN 5405*	Financial Concepts	3 hours
MAC 1103	College Algebra	3 hours
MAC 3233	Concepts of Calculus	3 hours
MAN 4720	Business Policy	3 hours
MAN 5051*	Management Concepts	2 hours
MAN 5501*	Introduction to Production/Operations Management	2 hours
MAN 5830*	Introduction to Management Information Systems	2 hours
MAR 5055*	Marketing Concepts	3 hours
SPC 1014	Fundamentals of Oral Communication	3 hours
	Behavioral Sciences	3 hours
	Humanities	3 hours
	Political and Legal Environment	3 hours

*Or undergraduate course equivalent taken as an undergraduate student.

EXAMINATION

Satisfactory completion of an end-of-program comprehensive examination is required.

The M.S. program in Accounting does not require a thesis.

Total Minimum Semester Hours Required:

If Foundation Core has been satisfied:

33

If Foundation Core is yet to be satisfied:

117

MASTER OF ARTS IN APPLIED ECONOMICS

Program Advisor: A. E. Day, PH 442, Phone 275-2465

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 degree in Applied Economics 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. degree in Applied Economics.

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 suggested below.

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 degree in Applied Economics 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 managers, 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 6046	Real Estate Analysis
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 6814	Quantitative Models for Business Decisions
MAR 6606	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 6006	Seminar in Comparative Economic Systems
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
MAN 6156	Personnel Resources Administration
MAN 6206	Organizational Behavior and Development
MAN 6896	Systems Analysis and Development
PAD 6417	Human Resource Management

LIST OF COURSES—COLLEGE OF BUSINESS ADMINISTRATION

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 5506 Managerial Accounting for Governmental and Nonprofit 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 3401, 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)

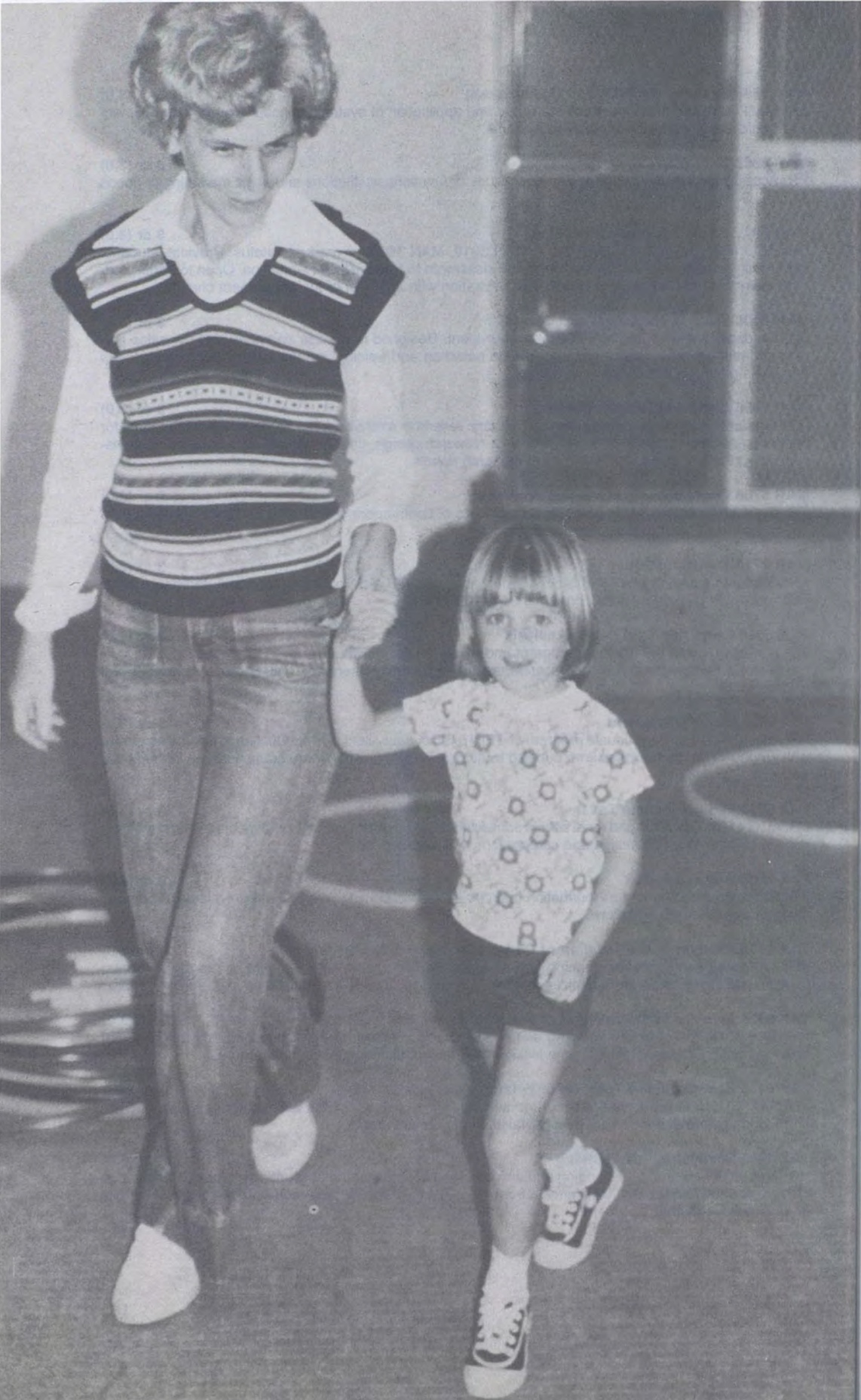
PR: ACG 3401, ACG 4123, ACG 4651, STA 3023 and meet School admission requirements. A continuation of ACG 4651. Special topics relative to the standards, practices and procedures followed in the audit function.

- 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 5413. (Not open for accounting majors.) Accounting as an information measurement system for internal planning and control.
- ACG 5435 Accounting Control Systems** 3 cr (3,0)
PR: Graduate standing, ACG 3361 and ACG 3401, or ACG 5425, 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 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 6697 Seminar in Auditing for Government and Nonprofit 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 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.
- 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 50 05 and ECO 641 6 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 5055 and ECO 5413 or equivalents. Effects of financial decisions upon the firm, interrelationships of these effects and alternatives available to financial managers in making these financial decisions.
- FIN 6406 Financial Analysis and Management** 3 cr (3,0)
PR: Graduate standing and FIN 5405 or equivalent. Conceptual and practical problems associated with financial management of the nonfinancial corporation.

- FIN 6425 Asset Management and Financial Decisions** 3 cr (3,0)
PR: Graduate standing and FIN 6406. Considers the interrelated decision making process of asset allocations, corporate fund raising, dividend policies and market maximization.
- FIN 6506 Analysis of Investment Opportunities** 3 cr (3,0)
PR: Graduate standing and FIN 6406. Deals with the theory and tools of analysis required in the management of financial assets.
- FIN 6627 International Financial Management** 3 cr (3,0)
PR: ECO 6415, FIN 6406. The theory of finance as applied to the operations of multinational firms and international capital markets.
- MAN 5051 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 5413 or equivalent. Introduction to the fundamental concepts, processes and institutions involved in the production of goods and services required by modern society.
- MAN 5830 Introduction to Management Information Systems** 2 cr (2,0)
PR: Acceptance into the graduate program. Designed to provide the student with the fundamentals of business data processing and management information systems used by organizations in a modern society.
- MAN 6055 Planning and Control Analysis** 3 cr (3,0)
PR: Graduate standing and MAN 5051 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.
- MAN 6075 History of Management Thought** 3 cr (3,0)
PR: Graduate standing and MAN 5051. The historical development of management in modern society with emphasis on the interrelationship between the management processes and the economic, social, and political environments.
- MAN 6121 Group Decisions and Analysis** 3 cr (3,0)
PR: Graduate standing and MAN 5051 or equivalent. Experience in company-wide management decision making by groups using the management game techniques. Analysis of the group decision-making process using video tapes.
- MAN 6156 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 6206 Organizational Behavior and Development** 3 cr (3,0)
PR: Graduate standing and MAN 5051 or equivalent. The analysis of human behavior in organizations in terms of the individual, small group, intergroup relationships, and the total organization.
- MAN 6565 Production/Operations Analysis** 3 cr (3,0)
PR: MAN 5051, MAN 5830 or equivalents and MAN 6814. 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 6814 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 6840 Research and Development Management** 3 cr (3,0)
PR: Graduate standing and MAN 5051. An examination of the function of research and development and the impact of technological innovation on our economic and social systems.

- MAN 6896 Systems Analysis and Development** 3 cr (3,0)
PR: MAN 5051 and graduate standing. Study and application of systems concepts for the improvement of organizational work and information 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: ACG 2001, ACG 2011, ECO 2013, MAN 3010, MAR 3023, or graduate status. 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 chairman.
- MAR 6406 Sales Management and Control** 3 cr (3,0)
PR: Graduate standing and MAR 5505 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 6606 Marketing Research Methods** 3 cr (3,0)
PR: Graduate standing. 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 6706 Contemporary Marketing Problems** 3 cr (3,0)
PR: Graduate standing, MAR 6716, or C.I. Analysis of contemporary marketing problems resulting from social, economic, and political developments.
- MAR 6716 Marketing Policy** 3 cr (3,0)
PR: Graduate standing and MAR 5055 or equivalent. Marketing policy formulation and decision making with respect to planning, pricing, promotion and distribution.
- REE 6046 Corporate Real Estate Analysis** 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.
- 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** 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.
- 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.



COLLEGE OF EDUCATION

Advanced courses through the College of Education are for students with at least baccalaureate degrees. Both degree and nondegree programs may be planned for people in education-related positions in social and government agencies, business and industry, as well as for professional educators in private and public schools. Master of Education, Master of Arts, and Master of Science (in School Psychology only) degrees are awarded. Doctor of Education and Educational Specialist degrees are available in Administration/ Supervision and Curriculum/Instruction. Courses are scheduled in the evening to meet the needs of people employed in the community.

COLLEGE ADMINISTRATION

R. G. Cowgill..... Interim Dean
P. E. Higginbotham..... Assistant Dean

P. E. Higginbotham..... Advanced Studies Coordinator
Office: ED 115, Phone 275-2437

Faculty

B. B. Anderson, Ed.D..... Professor
W. C. Bozeman, Ph.D..... Professor
D. K. Brumbaugh, Ed.D..... Professor
W. Clarke, Ed.D..... Professor
R. G. Cowgill, Ph.D..... Associate Dean and Professor
C. D. Dziuban, Ph.D..... Professor
W. K. Esler, Ph.D..... Chairperson, Department of Educational Foundations
and Professor
F. E. Green, Ed.D..... Professor
H. O. Hall, Ed.D..... Professor
D. E. Hernandez, Ed.D..... Professor
M. C. Hynes, Ph.D..... Professor
M. L. Kysilka, Ph.D..... Professor
R. Lange, Ph.D..... Professor
P.C. Manning, Ed.D..... Director, Educational Research
Institute and Professor
R. D. Martin, Ed.D..... Chairperson, Department of Instructional Programs
and Professor
J. Midgett, Ed.D..... Professor
C. C. Miller, Ed.D..... Professor
E. E. Miller, Ed.D..... Professor
M. J. Palmer, Ed.D..... Professor
F. D. Rohter, Ph.D..... Professor
R. A. Rothberg, Ed.D..... Professor
R. A. Thompson, Ed.D..... Professor
R. E. Weidenheimer, Ed.D..... Professor
J. H. Armstrong, Ed.D..... Director, Student Internships
and Associate Professor
D. J. Baumbach, Ed.D..... Associate Professor
J. S. Beadle, Ph.D..... Associate Professor
R. C. Bird, Ph.D..... Associate Professor
D. M. Blume, Ed.D..... Associate Professor
T. S. Cleland, Ph.D..... Associate Professor
D. W. Gurney, Ph.D..... Associate Professor
T. L. Harrow, Ph.D..... Associate Professor
S. L. Hiatt, Ph.D..... Associate Professor

<i>P. E. Higginbotham, Ed.D.</i>	Assistant Dean and Associate Professor
<i>B. Hoover, Ed.D.</i>	Associate Professor
<i>R. D. Hunter</i>	Associate Professor
<i>A. R. Joels, Ph.D.</i>	Associate Professor
<i>N. R. McGee, Ed.D.</i>	Associate Professor
<i>D. J. Meador, Ph.D.</i>	Associate Professor
<i>J. N. McLain, Ph.D.</i>	Associate Professor
<i>J. A. Miller, Ed.D.</i>	Associate Professor
<i>A. H. Olson, Ed.D.</i>	Associate Professor
<i>J. L. Olson, Ph.D.</i>	Associate Professor
<i>G. W. Orwig, Ed.D.</i>	Associate Professor
<i>R. F. Paugh, Ed.D.</i>	Associate Professor
<i>J. W. Powell, Ed.D.</i>	Chairperson, Department of Educational Services and Associate Professor
<i>J. N. Shadgett, Ed.D.</i>	Associate Professor
<i>B. W. Siebert, Ph.D.</i>	Associate Professor
<i>T. J. Sullivan, Ed.D.</i>	Associate Professor
<i>A. T. Wood, Ph.D.</i>	Associate Professor
<i>M. S. Bell, Ph.D.</i>	Assistant Professor
<i>K. L. Biraimah, Ph.D.</i>	Assistant Professor
<i>R. M. Bollet, Ed.D.</i>	Assistant Professor
<i>E. A. Clark</i>	Assistant Professor
<i>R. A. Cornell, Ed.D.</i>	Assistant Professor
<i>E. B. Cox, Ph.D.</i>	Assistant Professor
<i>J. A. Crocitto, Ed.D.</i>	Assistant Professor
<i>G. R. Gergley</i>	Assistant Professor
<i>H. Harlacher</i>	Assistant Professor
<i>H. J. Haughee, Ph.D.</i>	Assistant Professor
<i>M. H. Hopkins, Ph.D.</i>	Assistant Professor
<i>L. R. Hudson, Ph.D.</i>	Assistant Professor
<i>R. L. Marowitz, Ph.D.</i>	Assistant Professor
<i>H. P. Martin, Ed.D.</i>	Assistant Professor
<i>M. Miller, Ed.D.</i>	Assistant Professor
<i>J. M. Platt, Ed.D.</i>	Assistant Professor
<i>K. H. Renner</i>	Assistant Professor
<i>D. W. Sanford, Ed.D.</i>	Assistant Professor
<i>P. T. Sciortino, Ph.D.</i>	Assistant Professor
<i>S. E. Sorg, Ph.D.</i>	Assistant Professor
<i>M. L. While, Ed.D.</i>	Assistant Professor
<i>K. Williams, Ph.D.</i>	Assistant Professor

PROGRAMS IN EDUCATION

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

Administration/Supervision	Mathematics Education
Art Education	Music Education
Business Education	Physical Education
Counselor Education	Reading Education
Educational Media Specialist	School Psychology
Instructional Technology Specialization	Science Education
Elementary Education	Social Sciences Education
English Education	Speech Education
Exceptional Child	Vocational Education

Studies beyond the master's degree level leading to Educational Specialist and/or Doctor of Education degrees are available in Administration/Supervision and Curriculum/Instruction.

MASTER'S DEGREES

Admission

The Graduate Record Examination (GRE) 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 840 on the verbal-quantitative sections of the GRE. Alternatively, a GPA of less than 3.0 combined with a GRE of 1000 would also be acceptable. In addition, a student seeking a Master of Education degree must show evidence that all course work has been completed for the basic bachelor's level State of Florida teaching certificate. Master of Arts programs, available in some specialties, and a Master of Science in School Psychology may be planned without the student's having previously completed certification courses.

Those students who fail to meet the University admissions standards have the opportunity to apply for admission via the provisional category. To be considered for provisional selection a student must file an application with the Assistant Dean of the College of Education. Faculty committees with members from each department within the College of Education select students for provisional positions. A student must have a minimum score of at least 840 on the verbal-quantitative sections of the GRE to be considered for provisional status.

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

- 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 postbaccalaureate hours taken
- f. Grade point average on any postbaccalaureate work
- g. Recommendations by advisor and other professionals

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

Program of Study

Each advanced student is assigned an advisor by the Advanced Studies Office. If, prior to having an approved program on file with the College of Education, a student receives credit at another institution and plans to have the credit transferred to his UCF program, he enrolls in these courses at his own risk. Postbaccalaureate students may use their advisors for information and consultation, but this planning cannot be considered as planning a degree program.

Performance Standards

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

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

Comprehensive Examination

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

Research Project

All programs include a research project (6918/6909) and a research course (EDF 6481).

DOCTOR OF EDUCATION AND EDUCATIONAL SPECIALIST - DEGREES EDUCATIONAL SPECIALIST

General Description

Educational Specialist (Ed.S.) degree programs are offered in two areas. One is Administration/Supervision for students who are interested in decision-making positions in educational organizations. The second is Curriculum/Instruction designed primarily for teaching situations. This latter area is limited to selected specialization areas which have an approved master's degree program at the University of Central Florida.

Admissions Policy

Admissions will occur two times a year. Completed files must be on campus by *February 15 for Fall Semester admission* and by *September 15 for Spring Semester admission*.

Completed files include: 1) the application, 2) transcripts from all schools previously attended, 3) test scores, and 4) other information that may be requested after a file is started.

Admission Requirements

1. A master's degree from an accredited institution;
AND
2. A combined score of 1000 on the General Graduate Record Examination (verbal/quantitative scores combined);
AND
3. Recommended for admission by the appropriate major program area committee.

NOTE: Those applicants *who do not meet admission criteria* may appeal to the Graduate Advisory Committee for consideration. A second GRE score of 900 or above is required for review by this committee. The Assistant Dean of the College of Education is the chairperson of this committee and should be contacted for further information.

Degree Requirements

1. Complete a minimum of 36 semester hours beyond the Master's Degree in an approved program.
2. Have an overall 3.0 GPA on all graduate work attempted.
3. Complete a minimum of 12 graduate-level hours in the specialization area.
4. Complete a minimum of 6 graduate-level hours in research/statistics.
5. Pass all required examinations.
6. Complete all required internship or teaching experiences.

Transfer Credit

Total transfer credit can never exceed 9 semester hours. All credit must be earned after the Master's Degree with the maximum being 9 semester hours from other institutions within the State University System (SUS) or a maximum of 6 semester hours earned at institutions not in the SUS but which are fully accredited.

Required Examinations

Two examinations are required: Administration/Supervision majors must successfully complete one 3-hour examination in their major area and one 3-hour examination in Curriculum.

Curriculum and Instruction majors must successfully complete one 3-hour examination in their teaching specialty and one 3-hour examination in the Educational Foundations area.

Time Limits

Course credit hours counted toward a degree may be no more than seven years old by the time the degree is 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 continuous attendance. Because students must occasionally interrupt their attendance for a brief period, they will be considered to have interrupted their continuous 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.

Additional Information

Admission to the Educational Specialist Degree Program does not guarantee admission to the Doctoral Program. Upon completion of the Specialist Degree, the candidate must make separate application to be admitted to the Ed.D. degree program.

DOCTOR OF EDUCATION

General Description

Doctor of Education (Ed.D.) degree programs are offered in two areas. One is Administration/Supervision for students who are interested in decision-making positions in educational organizations. The second is Curriculum/Instruction, designed primarily for teaching situations. This latter area is limited to selected specialization areas which have an approved master's degree program at the University of Central Florida.

Admissions Policy

Admissions will occur two times a year. Completed files must be on campus by *February 15 for Fall Semester admission* and by *September 15 for Spring Semester admission*.

Completed files include: 1) the application, 2) transcripts from all schools previously attended, 3) test scores, 4) a current resume, and 5) other information that may be requested after a file is started.

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. A combined 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 Graduate Advisory Committee for consideration. A second GRE score of 940 or above is required for review by this committee. The Assistant Dean of the College of Education is the Chairperson of this committee and should be contacted for further information.

Degree Requirements

- | | |
|--|---------------------------|
| 1. Major Program Area
(includes selected courses in Foundations and Curriculum) | Minimum 45 semester hours |
| 2. Research and Statistics | Minimum 15 semester hours |
| 3. Dissertation | Minimum 20 semester hours |
| 4. Pass all candidacy examinations | |
| 5. Have an overall 3.0 GPA on all graduate work attempted. | |
| 6. Complete all required internship or teaching experiences. | |

Transfer Credit

The number of transfer credit hours applied to the course requirements for a doctoral degree cannot exceed 30 semester hours. These will be determined on a case-by-case basis by the graduate advisor.

Candidacy Examinations

1. All required examinations will be taken during the same semester. They can be taken no sooner than the last term of the student's course work and must be completed prior to admission to candidacy.
2. Examinations will be scheduled during the tenth week of the Fall and Spring Semesters. They will NOT be scheduled during the Summer Semester.
3. All doctoral candidates will be required to write in three areas; these are:
 - a. Specialization or Teaching Field 5-hour examination
 - b. Educational Foundations 3-hour examination
 - c. Curriculum and Instruction 3-hour examination

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 a student 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 continuous attendance only if the interruption is for three or more consecutive terms, including Summer. Under these circumstances, a student will lose the option of fulfilling degree requirements under earlier catalogs.

Residency Requirement

Each student shall complete two contiguous semesters in full-time graduate student status. "Full-time" is defined as 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 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 made. Post-candidacy enrollment is allowable for a maximum of four years, subject to the seven-year time limitation.
2. Time Limitation

Students have seven years from the date of admission to the doctoral program to complete the dissertation. If they pass the seven-year deadline, the candidacy examinations must 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 by the Dean of Graduate Studies.

4. Dissertation

Dissertations are required in all doctoral programs. College of Education candidates will follow the APA (American Psychological Association) guidelines.

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.

ADMINISTRATION AND SUPERVISION

These programs are perceived as a sequential set of activities developed as a format for establishing an educational leadership plan for the area. Practicing professionals and aspiring educators have the opportunity to enter the program which fits their needs. The M.Ed. option includes Administration and Supervision K-12, Administration and Supervision K-6, and Administration and Supervision 7-12. These programs require 39-42 semester hours.

The M.A. in Educational Administration does not fulfill state certification requirements. Additional courses may be required in special methods, general methods and curriculum as prerequisites to the degree which is individualized to meet the needs of the student and requires 42 semester hours for completion.

Master of Education in Administration & Supervision

Contact Person: Dr. William Bozeman (305) 275-2013

Three years K-12 teaching experience is required by the State of Florida for Certification in Administration and Supervision.

AREA A - CORE		12 Semester Hours
EDA 6918,6909	Research Report	2,1 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
Choose one:		
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
EDF 6608	Social Factors in American Education	3 hours
AREA B - SPECIALIZATION		21 Semester Hours
EDA 6061	Organization and Administration of Schools	3 hours
EDA 6502	Organization and Administration of Instructional Programs	3 hours
EDG 6940	Graduate Internship	3 hours
EDS 6123	Educational Supervisory Functions	3 hours
EDS 6130	Educational Supervisory Techniques	3 hours
or		
EDS 6111	Administration & Supervision of Staff Development	3 hours
And two of the following:		
EDA 6232	Legal Aspects of School Operation	3 hours
EDA 6240	Educational Financial Affairs	3 hours
EDA 6260	Educational Systems and Facilities	3 hours

AREA C - CURRICULUM

6 Semester Hours

Both courses in either ESE or EDE.

ESE 6325	Curriculum Theory	3 hours
ESE 6416	Curriculum Evaluation	3 hours
or		
EDE 5541	Individualizing Instruction in the Elementary School	3 hours
EDE 6205	Elementary School Curriculum	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required: 39

Master of Arts**Administration/Supervision Option**

This program does not lead to Certification in School Administration or Supervision.

AREA A - CORE

15 Semester Hours

EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
or		
EDF 6608	Social Factors in American Education	3 hours
EDF 6401	Statistics for Educational Data	3 hours
or		
EDF 6432	Measurement and Evaluation in Education	3 hours
EDA 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION

9 Semester Hours

Courses will be selected with approval of the advisor.

AREA C - ADMINISTRATION

18 Semester Hours

EDA 6061	Organization and Administration of Schools (required)	3 hours
EDA 6232	Legal Aspects of School Operation	3 hours
EDA 6240	Educational Financial Affairs	3 hours
EDA 6260	Educational Systems and Facilities	3 hours
EDA 6502	Organization and Administration of Instructional Programs (required)	3 hours
EDG 6940	Graduate Internship (required)	3 hours
EDS 6123	Educational Supervisory Functions	3 hours
or		
EDS 6130	Educational Supervisory Techniques	3 hours

Total Minimum Semester Hours Required: 42

Master of Arts**Teacher Specialist Option**

Contact Person: Dr. Marcella Kysilka (305) 275-2011 or Dr. Art Olson (305) 275-1040

AREA A - CORE

15 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
EDF 6608	Social Factors in American Education	3 hours
EDF 6918,6909	Research Report	2,1 hours

AREA B - ANALYSIS AND SKILL DEVELOPMENT		15 Semester Hours
CAP 6613	Utilizing Microcomputers in Education	3 hours
EDF 6257	Analysis of Classroom Teaching	3 hours
EDF 6259	Strategies of Classroom Management	3 hours
EDG 6345	Teaching Skills Development	3 hours
EDF 6940	Graduate Internship	3 hours
ELECTIVES—Select from:		6 Semester Hours
EDE 6205	Elementary School Curriculum	3 hours
or		
ESE 6325	Curriculum Theory	3 hours
ESE 6416	Curriculum Evaluation	3 hours
EDS 6130	Educational Supervisory Techniques	3 hours
EGC 5033	Guiding Human Relationships	3 hours
LIS 6313	Multi-Media Message Design	3 hours
Total Minimum Semester Hours Required:		36

COUNSELOR EDUCATION

Contact Person: Dr. David Mealor (305) 275-2054 or Drs. Bollett, Crocitto, or Marowitz

This program has three 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, junior college). This degree requires a minimum of 36 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 schools, K-12, at the master's level. This degree program requires a minimum of 42 semester hours.

The third option is a Master of Arts degree program in community-agency counseling for the student who is not interested in working in a school setting, but is interested in other counseling employment (e.g., employment service, vocational rehabilitation, juvenile courts, crisis intervention centers, etc.). This program is planned to meet State of Florida license standards. A minimum of 48 semester hours is required.

Other criteria: For consideration for admission to any of the counselor education programs, an applicant must secure and complete a special packet of materials for review by a faculty admissions committee. A formal interview is required and will be considered for final admission.

Master of Education in Counselor Education

AREA A - CORE		12 Semester Hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EGC 6918,6909	Research Report	2,1 hours
AREA B - SPECIALIZATION		21 Semester Hours
EGC 5005	Introduction to Guidance and Human Services	3 hours
EGC 6235	Procedures for Group Testing	3 hours
EGC 6317	Vocational & Career Development Procedures	3 hours
EGC 6435	Theories of Individual Counseling	3 hours
EGC 6436	Techniques of Counseling	3 hours
EGC 6446	Counseling Practicum	3 hours
EGC 6505	Group Procedures in Counseling	3 hours
AREA C - PROFESSIONAL FIELD EXPERIENCE		Minimum required 3 Semester Hours
ECG 6946	Counseling Internship	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335 Reading in the Content Areas 3 hours

Total Minimum Semester Hours Required: 36

Master of Arts in Counselor Education

AREA A - CORE 15 Semester Hours

EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
EGC 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION 21 Semester Hours

EGC 5005	Introduction to Guidance and Human Services	3 hours
EGC 6235	Procedures for Group Testing	3 hours
EGC 6317	Vocational and Career Development Procedures	3 hours
EGC 6435	Theories of Individual Counseling	3 hours
EGC 6436	Techniques of Counseling	3 hours
EGC 6446	Counseling Practicum	3 hours
EGC 6505	Group Procedures in Counseling	3 hours

AREA C - ADDITIONAL CERTIFICATION 3 Semester Hours

EDA 6061	Organization and Administration of Schools	3 hours
EDA 6502	Organization and Administration of Instructional Programs	3 hours
EDE 6205	Elementary School Curriculum	3 hours
EDG 6337	Techniques of Games Use in Education	3 hours
EDS 6123	Educational Supervisory Functions	3 hours
EDS 6130	Educational Supervisory Techniques	3 hours
ESE 6235	Curriculum Design	3 hours
LIS 4428	Utilization of Education Media	3 hours
ESE 6325	Curriculum Theory	3 hours

AREA D - PROFESSIONAL FIELD EXPERIENCE Minimum Required 3 Semester Hours

EGC 6946	Counseling Internship	3 hours
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COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335 Reading in the Content Areas 3 hours

A 3-hour teaching methods course in undergraduate specialization or a practicum in student teaching or full-time experience in a K-12 setting is needed for certification.

Total Minimum Semester Hours Required: 42

Master of Arts in Community-Agency Counseling

AREA A - CORE 6 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EGC 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION 21 Semester Hours

CLP 5166	Advanced Abnormal Psychology	3 hours
EGC 6317	Vocational & Career Development Procedures	3 hours
EGC 6426	Introduction to Community Counseling	3 hours
EGC 6435	Theories of Individual Counseling	3 hours
EGC 6436	Techniques of Counseling	3 hours
EGC 6505	Group Procedures in Counseling	3 hours

Choose one:

EGC 6215	Individual Psycho-Educational Testing I, Binet, WISC-R, WAIS	3 hours
EGC 6235	Procedures for Group Testing	3 hours

AREA C - COGNATE ELECTIVES 9 Semester Hours

EGC 6409	Current Trends	3 hours
EGC 6414	Family Counseling I	3 hours
EGC 6415	Family Counseling II	3 hours
EGC 6461	Counseling Substance Use and Abuse	3 hours
EGC 6463	Counseling Special Populations/Their Families	3 hours
EGC 6467	Counseling Older Persons/Their Families	3 hours
EGC 6515	Advanced Group Counseling	3 hours

AREA D - PROFESSIONAL FIELD EXPERIENCES 12 Semester Hours

EGC 6706	Consultation and Staffing to be taken concurrently	3 hours
EGC 6446	Counseling Practicum I	3 hours
EGC 6946	Counseling Internship	3 hours
EGC	Counseling Practicum II	3 hours

PROGRAM FOR STATE OF FLORIDA LICENSURE

After completing two-thirds of the course work, the graduate student will take comprehensive written exams.

Total Minimum Semester Hours Required: 48

THE EDUCATIONAL MEDIA PROGRAM

Contact Person: Drs. Baumbach, Cornell or Orwig (305) 275-2153

This program leads to a Master of Education degree for school media special ists. It is designed to offer advanced skills in administration, production, instructional design, research, and evaluation of media programs, as well as knowledge and applications of innovations and new technologies for education. Additional course work is required for those not certified in media.

Master of Education in Educational Media

AREA A - CORE 12 Semester Hours

EDF 6481	Fundamentals of Graduate Research Education	3 hours
EME 6918,6909	Research Report	2,1 hours

Choose 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

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

AREA B - SPECIALIZATION 15 Semester Hours

EME 6613	Instructional System Design	3 hours
EME 6946	Graduate Internship	3 hours
LIS 5262	Computer Applications in Instructional Technology	3 hours
LIS 5312	Advanced Production Techniques	3 hours
LIS 5454	Administrative Principles in Media Centers	3 hours
LIS 6313	Multi-Media Message Design	3 hours
LIS 6509	Seminar Educational Media	3 hours

AREA C - ELECTIVES 6 Semester Hours

EDG 6337	Games Use in Education	3 hours
EEX 5051	Exceptional Children in School	3 hours
EGC 5005	Introduction to Guidance and Human Services	3 hours
EME 5208	Media and Methods	3 hours
LAE 6714	Investigation in Children's Literature	3 hours
LAE 5464	Literature for Adolescents	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required:	33
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OTHER COURSES

The following courses are required if previous certification was *NOT* in media:

LIS 4310	Production of Materials for Media Center	3 hours
LIS 4428	Utilization of Educational Media	3 hours
LIS 4453	School Media Services	3 hours
LIS 4510	Development of Media Collections	3 hours
LIS 4540	Interaction Techniques in Media Services	3 hours
LIS 4601	Reference Sources and Services	3 hours
LIS 4731	Organization of Media and Information	3 hours

Master of Arts in Educational Media Instructional Technology

This program leads to a Master of Arts degree and is designed for those who wish to work in business, industry, government, medicine, or other settings where training takes place. Instructional technologists analyze training problems and requirements, design, develop, evaluate, and manage instructional programs.

AREA A - CORE	6 Semester Hours
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EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EME 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION	30 Semester Hours
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EME 5054	Instructional Technology - A Survey of 3 hours Applications (required)	
EME 6613	Instructional Systems Design (required)	3 hours
EME 6946	Graduate Internship (required)	3 hours
LIS 6313	Multi-Media Message Design (required)	3 hours
Electives — Any not listed below MUST be approved:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measure and Evaluation	3 hours
EME 6053	Current Trends in Instructional Technology	3 hours
EME 6403	Computer Assisted Instruction	3 hours
LIS 5262	Computer Applications in Instructional Technology	3 hours
LIS 5312	Advanced Production	3 hours

Total Minimum Semester Hours Required:	36
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ELEMENTARY EDUCATION

MASTER OF EDUCATION IN ELEMENTARY EDUCATION

Contact Person: Dr. Steven Sorg (305) 275-2161

Art Education Specialization, K-12 (M.Ed.)

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 33 semester hours and previous certification in art.

AREA A - CORE		12 Semester Hours
ARE 6918,6909	Research Report	2,1 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - SPECIALIZATION		21 Semester Hours
ARE 5251	Art for Exceptionalities	3 hours
ARE 5255	Arts in Recreation	3 hours
ARE 5444	Jewelry Making	3 hours
ARE 5648	Contemporary Visual Arts Education	3 hours
ARE 6455	K-12 Art Instructional Materials I	3 hours
ARE 6456	K-12 Art Instructional Materials II	3 hours
ART 5109C	Crafts Design	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required: 33

Early Childhood Specialization (M.Ed.)

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 Semester Hours
EDE 6918,6909	Research Report	2,1 hours
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	3 hours
	or	
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - SPECIALIZATION		19 Semester Hours
EDE 5541	Individualizing Instruction in the Elementary School	3 hours
EEC 5205	Programs in Early Childhood Education	3 hours
EEC 5206	Organization of Instruction in Early Childhood Education	3 hours
EEC 5208	Creative Activities in Early Childhood	4 hours
EEX 5051	Exceptional Children in the Schools	3 hours
PET 6238C	Perceptual Motor Development	3 hours
AREA C - Alternate course at the 6000 level may be selected in consultation with an advisor.		3 Semester Hours
MAE 6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher	3 hours
Total Minimum Semester Hours Required:		34

Elementary Education Specialization (M.Ed.)

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, diagnosis and remediation in reading and mathematics, and an elective area permitting a selection of courses in a specific area, for example, reading or kindergarten education.

AREA A - CORE		12 Semester Hours
EDE 6918,6909	Research Report	2,1 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - CURRICULUM		15 Semester Hours
LAE 6616	Trends in Language Arts Education	3 hours
MAE 6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher	3 hours
RED 5514	Classroom Diagnosis and Treatment of Reading Difficulties	3 hours
SCE 6616	Trends in Elementary School Science Education	3 hours
SSE 6617	Trends in Elementary School Social Studies Education	3 hours
AREA C - ELECTIVES		6 Semester Hours
EDE 5541	Individualizing Instruction in the Elementary School	3 hours
EDE 6205	Elementary School Curriculum	3 hours
EEX 5051	Exceptional Children in the Schools	3 hours
LAE 6714	Investigation in Children's Literature	3 hours
MAE 5637	Laboratory Programs in Mathematics	3 hours
MUE 5611	Trends in Elementary School Music Education	3 hours
RED 6116	Trends in Reading Education	3 hours
Total Minimum Semester Hours Required:		33

Mathematics Specialization (M.Ed.)

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

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 Elementary School and Junior High School Mathematics if he has sufficient mathematics (12 semester hours) content courses and certain experience-methods requirements.

AREA A - CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
MAE 6918,6909	Research Report	2,1 hours

Choose 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

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

AREA B - SPECIALIZATION 12-15 Semester Hours

MAE 5637	Laboratory Programs in Mathematics	3 hours
MAE 6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher	3 hours
MAE 6549	Practicum in Mathematics Instruction, K-12	1-3 hours
MAE 6899	Seminar in Teaching Mathematics	3 hours

AREA C - ELECTIVES 6-9 Semester Hours

MAE 5318	Current Methods in Elementary School Mathematics	3 hours
MAE 6145	Mathematics Curriculum, K-12	3 hours
MAE 6448	Designing Instructional Packages for Computer Applications	3 hours
MAE 6641	Problem Solving and Critical Thinking Skills in Mathematics, K-12	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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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 12 semester hours in mathematics INCLUDING college algebra or higher mathematics.

Total Minimum Semester Hours Required: **33**

Music Education Specialization (M.Ed.)

Contact Person: Dr. Mary J. Palmer (305) 275-2018/275-2934

This program, in cooperation with the Department of Music, is for students who are certified to teach music (K-12). The Master of Education program, organized to increase knowledge and improve teaching skills, includes advanced work in research and educational foundations; a practicum in music education; and courses in foundations of music education, general music, teaching performing organizations and curriculum. Advanced courses in music history, music theory, conducting and performance are included.



AREA A - CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
MUE 6918,6909	Research Report	2,1 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - CURRICULUM		9 Semester Hours
MUE 6155	Teaching Performing Organizations	3 hours
MUE 6349	Advanced General Music	3 hours
MUE 6946	Practicum in Music Education	3 hours
AREA C - SPECIALIZATION		12 Semester Hours
MUG 4102	Advanced Conducting	2 hours
MUH 4340	Seminar: Music to Bach	2 hours
MUH 4361	Seminar: Music Since Bach	2 hours
MUT 5325	Arranging and Composing Music	2 hours
*MV 5251	Secondary Graduate Performance	1 hour
*MV 5251	Secondary Graduate Performance	1 hour
*MV 5351	Principal Graduate Performance	2 hours
*Full prefix will be determined by the instrument on which student performs, i.e., MVK signifies piano/organ.		
COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.		
RED 6335	Reading in the Content Area	3 hours
OTHER REQUIREMENT		
A placement examination in music history, music theory, and sight singing (or completion of equivalent courses below) is required.		
MUH 4218	Review of Music History	1 hour
MUT 4031	Review of Music Theory	1 hour
MUT 4275	Review of Sight-Singing and Ear Training	2 hours
Total Minimum Semester Hours Required:		33

Reading Specialization K-12 (M.Ed.)

Contact Person: Dr. Richard A. Thompson (305) 275-2018/275-2934

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		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
RED 6918,6909	Research Report	2,1 hours
Choose one:		
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
EDF 6608	Social Factors in American Education	3 hours
EDF 6432	Measurement & Evaluation in Education	3 hours
(Required for Certification)		

AREA B - SPECIALIZATION		21 Semester Hours
RED 5337	Reading in the Secondary School	3 hours
RED 6116	Trends in Reading Education	3 hours
RED 6335	Reading in the Content Areas	3 hours
RED 6515	Remedial Reading Practicum	3 hours
RED 6746	Management of Reading Programs	3 hours
RED 6845	Clinical Diagnosis and Remediation of Reading Difficulties*	3 hours
RED 6846	Clinical Reading Practicum	3 hours
PREREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program.		
RED 5147 (or 3012)	Developmental Reading	3 hours
RED 5514 (or 4519)	Diagnosis & Treatment Reading Difficulties	3 hours
Total Minimum Semester Hours Required:		33

MASTER OF ARTS IN ELEMENTARY EDUCATION

Contact Person: Dr. Betty Anderson, 275-2016, 275-2934

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

The Master of Arts degree for the baccalaureate *non-education* major also includes the broad areas of human development, history/philosophy of education, measurement and evaluation, curriculum, teaching strategies and practical experience in elementary school classrooms (internship).

Art Education (M.A.)

The Master of Arts program in visual arts is planned to provide the art-orientated person with a degree which includes certification. The 40 hour program meets state certification requirements in foundations, special methods in art education, general methods in teaching and the student teaching component. An M.A. program in 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 - PROFESSIONAL CORE		18 Semester Hours
ARE 6918,6909	Research Report	2,1 hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6517	History and Philosophy of American Education	3 hours
ESE 6325	Curriculum Theory	3 hours
	or	
EDE 6205	Elementary Curriculum	
AREA B - SPECIALIZATION		12 Semester Hours
ARE 5251	Art for Exceptionalities	3 hours
ARE 5255	Arts in Recreation	3 hours
ARE 5444	Jewelry Making in Schools	3 hours
ARE 5648	Contemporary Visual Arts Education	3 hours
ARE 6455	K-12 Art Instructional Materials I (required)	3 hours
ARE 6456	K-12 Art Instructional Materials II (required)	3 hours
ART 5109C	Crafts Design	3 hours
AREA C - INTERNSHIP		10 Semester Hours
EDG 6940	Graduate Internship (or equivalent)	3 hours
EDG 6940	Graduate Internship	7 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required:		40
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Elementary Education Specialization Program for Certified Teachers (M.A.)

A program for students previously certified as a Secondary Teacher or as a K-12 Teacher is shown below:

AREA A - PROFESSIONAL CORE 15 Semester Hours

EDE 6918,6909	Research Report	2,1 hours
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EDF 6481	Fundamentals of Graduate Research in Education	3 hours
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MAE 6517	Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher	3 hours
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RED 5147	Developmental Reading	3 hours
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RED 5514	Classroom Diagnosis and Treatment of Reading Difficulties	3 hours
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AREA B - SPECIALIZATION 21 Semester Hours

ARE 4313	Art in the Elementary School	3 hours
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HLP 4460	Teaching Elementary School Health and Physical Education	3 hours
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LAE 6616	Trends in Language Arts Education	3 hours
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LAE 6714	Investigation in Children's Literature	3 hours
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MAE 5318	Current Methods in Elementary School Mathematics	3 hours
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SCE 6616	Trends in Elementary School Science Education	3 hours
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SSE 6617	Trends in Elementary School Social Studies Education	3 hours
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COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Area	3 hours
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Choose one of the following if preparation is at
the Secondary level:

EDE 5541	Individualizing Instruction in the Elementary School	3 hours
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EDE 6205	Elementary School Curriculum	3 hours
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Total Minimum Semester Hours Required:		36
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Elementary Education Specialization Program for Teaching Gifted Students

AREA A - PROFESSIONAL CORE

EDF 6481	Fundations of Graduate Research	3 hours
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EDF 6517	History & Philosophy of American Education or	3 hours
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EDF 6155	Lifespan Human Development	3 hours
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EDF 6432	Measurement & Evaluation in Education	3 hours
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EGI 6918,6909	Research Report	2,1 hours
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AREA B - CURRICULUM CORE

Choose two:

EME 5208	Media & Methods in Teaching	3 hours
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CAP 6613	Utilizing Microcomputers in Education	3 hours
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EDG 6337	Techniques of Game Use in Education	3 hours
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EDE 5541	Individualizing Instruction in Elementary School	3 hours
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Choose two:

LAE 6616	Trends in Language Arts Education	3 hours
MAE 6641	Problem Solving & Critical Thinking Skills	3 hours
SCE 6616	Trends in Elementary School Science Education	3 hours
SSE 6617	Trends in Elementary School Social Studies Education	3 hours
LAE 6714	Investigation in Children's Literature	3 hours
RED 6616	Trends in Reading	3 hours

AREA C - CONTENT SPECIALIZATION 6 hours

Selected courses in a subject field. Specific courses will depend upon student's previous academic background.

AREA D - SPECIALIZATION/GIFTED

EEX 5051	Exceptional Children in Schools	3 hours
EGI 6051	Understanding Gifted/Talented Student	3 hours
EGI 6245	Program Planning & Methodology	4 hours
EGC 6500	Guidance & Counseling Gifted/Talented Individuals	3 hours
EGI 6938	Seminar: Working with Parents/Other Professionals	3 hours
EGI 6946	Practicum	2-6 hours

Total Minimum Semester Hours Required: 47

Elementary Education Specialization Program for Non-Education Majors (M.A.)

A minimum requirement for this degree would be 36 hours. However, depending upon the student's background, the program could be extended to 46 hours. This program provides for professional and specialization preparation in Elementary Education as shown below:

AREA A - PROFESSIONAL CORE

EDE 6205	Elementary School Curriculum	3 hours
EDE 6918,6909	Research Report	2,1 hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
EDF 6517	History and Philosophy of American Education	3 hours

AREA B - SPECIALIZATION

LAE 4314	Language Arts in the Elementary School	3 hours
MAE 5318	Current Methods in Elementary School Mathematics	3 hours
SCE 6616	Trends in Elementary School Science Education	3 hours
SSE 6617	Trends in Elementary School Social Studies Education	3 hours
RED 5147	Developmental Reading	3 hours
RED 5514	Classroom Diagnosis and Treatment of Reading Difficulties	3 hours

AREA C - INTERNSHIP

EDG 6940	Graduate Internship (or equivalent)	3 hours
EDG 6940	Graduate Internship	7 hours

COREQUISITES

ARE 4313	Art in the Elementary School	3 hours
EDE 4937	Drug Abuse Education	3 hours
HLP 4460	Teaching Elementary School Health & Physical Education	3 hours
MUE 3401	Music in the Elementary School	3 hours

Total Minimum Semester Hours Required: 36

EXCEPTIONAL CHILD SPECIALIZATION AREAS —

Master of Education

Contact Person: Dr. David Mealor (305) 275-2054 or Dr. J. Midgett 275-2055
or Dr. J. Olson 275-2055 or Dr. M. Miller 275-2040

The Master of Education K-12 degree program in exceptional student education focuses on three types of exceptionality:

- EH Emotionally Handicapped - Inability to achieve adequate academic progress or satisfactory interpersonal relationships not attributed primarily to physical, sensory or intellectual deficits.
- EMH Educable Mentally Handicapped - Significant impairment in general intellectual functioning concurrent with deficits in adaptive behavior which are manifested during the development period.
- SLD Specific Learning Disability - 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.

Students who are not certified in Exceptional Education must take the following prerequisite courses *before entering* the master's program. A student who is interested only in certification will have to take a combination of graduate and undergraduate courses.

EEX 5051	Exceptional Children in the Schools	3 hours
EEX 3102	Language Development & Common Disorders	3 hours
EEX 3221	Assessment Exceptional Learners	3 hours
RED 5147	Developmental Reading	3 hours
MAE 5318	Current Methods in Elementary School Math	3 hours

One of the following specialization courses is required; the choice is dependent upon the student's area and advisor's recommendation.

Emotionally Handicapped

EED 4011	Introduction to Teaching the Emotionally Disturbed	
or		

Specific Learning Disability

ELD 4011	Introduction to Specific Learning Disabilities	
or		

Mentally Handicapped

EMR 4011	Introduction to Mental Retardation	
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This program is for those persons who have an undergraduate degree in Exceptional Education or who have an education background.

AREA A Core 12 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EEX 6918,6909	Research Report	2,1 hours

Choose one:

EDF 6155	Lifespan Human Development & Learning	3 hours
EDF 6517	History & Philosophy of American Education	3 hours
EDF 6608	Social Factors in American Education	3 hours

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

AREA B - Curriculum Core

18 Semester Hours

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 6266	Curriculum Prescriptions for the Exceptional Population	3 hours

Choose one:

EPH 5335	Physical and Sociological Implications of Handicapping Conditions	3 hours
EEX 6257	Exceptional Adolescents	3 hours

Choose one:

EEX 6883	Clinical Practice** or Restrictive Elective (See Advisor)	3 hours
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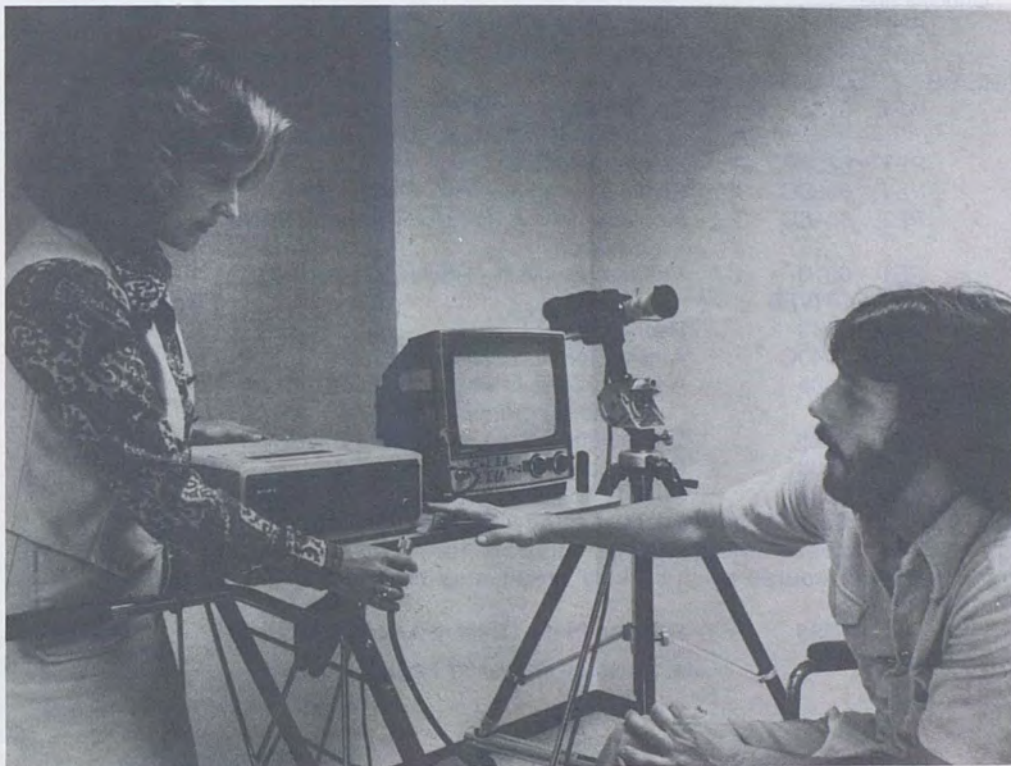
**Clinical Practice is not required for students with an undergraduate Exceptional Education degree or for teachers who have taught in Exceptional Education for two years before enrolling in the Master's Program.

AREA C - Specialization. Choose one of the following. 3 Semester Hours

Choice will be dependent upon the student's specialty area.

ELD 6323	Theory & Application for Specific Learning Disabilities	3 hours
EMR 6205	Theory & Application for Educable Mentally Handicapped	3 hours
EED 6226	Theory & Application for Emotionally Handicapped	3 hours

Total Minimum Semester Hours Required 33



PHYSICAL EDUCATION

Programs in Physical Education offer a Master of Education (M.Ed.) and Master of Arts (M.A.) in Education degrees with specialization in various aspects of physical education. The M.Ed. degree program is designed for people with a background in education who are already certified by the state to teach physical education. This program is sufficiently flexible to meet a range of student needs in improving proficiency and awareness in (1) teaching skills, (2) curricular innovations, (3) research findings and techniques, (4) interpersonal skills and (5) administrative techniques.

The M.A. degree program is structured for students who may or may not have a background in education or physical education to provide a more in-depth study of a specific area of physical education. Students fulfilling the requirements of these programs will be prepared to enter positions in education, private business, industry and government.

Master of Education in Physical Education

Contact Person: Dr. Hugh Martin (305) 275-2048

AREA A - CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
PET 6918,6909	Research Report	2,1 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - SPECIALIZATION		15 Semester Hours
PET 6146	Current Trends and Philosophical Foundations of Physical Education	3 hours
PET 6238C	Perceptual Motor Development	3 hours
PET 6386C	Environmental Exercise Physiology	3 hours
PET 6515C	Measurement in Kinesiology and Physical Education	3 hours
PET 6910	Problem Analysis—Review of Literature	3 hours
AREA C - ELECTIVES		6 Semester Hours
LEI 6443	Recreation	3 hours
PET 6040C	Analysis of Human Performance	3 hours
PET 6405	Administration of Physical Education and Athletic Programs	3 hours
PET 6425	Curriculum Design in Physical Education	3 hours
PET 6908	Independent Study	
PET 6938	Special Topics	
COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.		
RED 6335	Reading in the Content Areas	3 hours
Total Minimum Semester Hours Required:		33

Master of Arts in Physical Education Options **Exercise Physiology/Wellness Option**

Contact Person: Dr. Frank Rohter (305) 275-2049

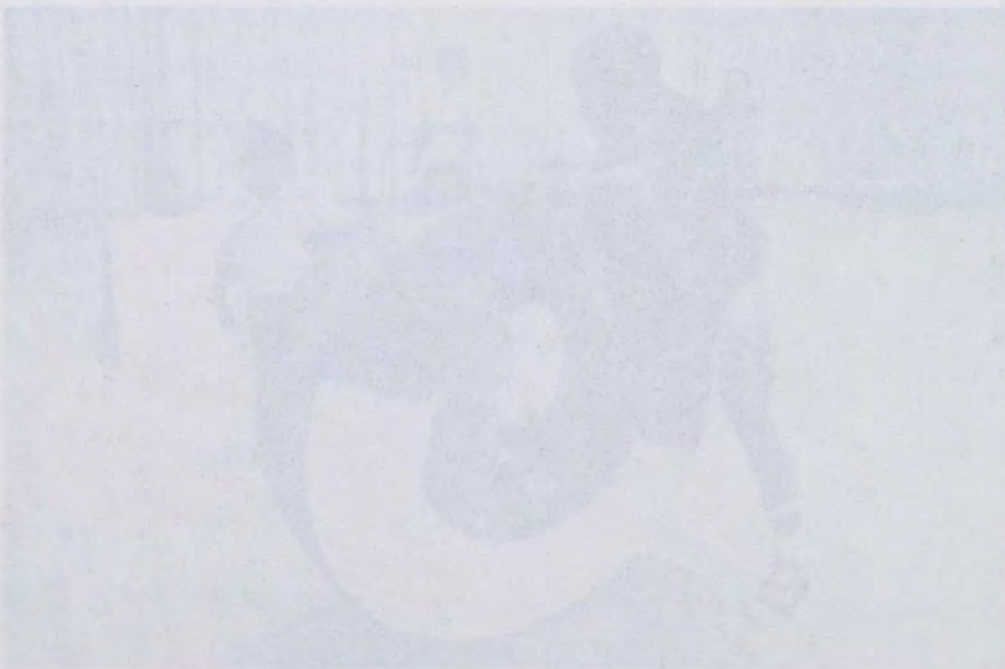
AREA A - CORE		12-15 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
PET 6910	Problem Analysis—Review of Literature	3 hours
PET 6918,6909	Research Report	2,1 hours
PET 6946	Internship	3-6 hours
AREA B - PHYSIOLOGICAL		12 Semester Hours
PET 6386C	Environmental Exercise Physiology	3 hours
PET 6377	Physiology of Neuromuscular Mechanisms	3 hours
PET 6367	Physical Performance & Energy Supplies	3 hours
PET 6388	Exercise Physiology & Cardiovascular	3 hours
AREAC - PROFESSIONAL PRACTICE		
PET 6086	Exercise Intervention & Risk Hazards	3 hours
PET 6416	Administration of Corporate Programs	3 hours
PET 6085	Exercise Lifestyles—Adherence & Compliance	3 hours
AREA D - ELECTIVES		3-6 Semester Hours
HSC 6513	Principles & Practice of Medicine	3 hours
EDF 6401	Statistics for Educational Data	3 hours
OTHER COURSES		
To be selected in consultation with Advisor		
PET 6040C	Analysis of Human Performance	3 hours
PET 6146	Current Trends and Philosophical Foundations	3 hours
PREREQUISITES		
Prescribed by the College of Education to meet State Certification requirements or as support for the degree program.		
PET 4360C	Exercise Physiology - Cardiovascular	2 hours
PET 4361C	Exercise Physiology - Respiratory	2 hours
PET 4310C	Anatomic and Mechanical Kinesiology	2 hours



Perceptual Motor Development Option

Contact Person: Dr. John Powell (305) 275-2047

AREA A - PROFESSIONAL		15 Semester Hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6401	Statistics for Educational Data	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
PET 6146	Current Trends and Philosophical Foundations of Physical Education	3 hours
PET 6386C	Environmental Exercise Physiology	3 hours
AREA B - SPECIALIZATION		12 Semester Hours
EDG 6946	Graduate Internship	3 hours
PET 6238C	Perceptual Motor Development	3 hours
PET 6910	Problem Analysis—Review of Literature	3 hours
PET 6918,6909	Research Report	2,1 hours
AREA C - ELECTIVES		9 Semester Hours
EEX 5051	Exceptional Children in the Schools	3 hours
EEX 5215	Psycho-educational Appraisal of Exceptional Children	3 hours
ELD 6112	Foundations and Diagnosis of Learning Disabilities	4 hours
PET 6405	Administration of Physical Education and Athletic Programs	3 hours
PET 6425	Curriculum Design in Physical Education	3 hours
Total Minimum Semester Hours Required:		36





SCHOOL PSYCHOLOGY — Master of Science

The Master of Science 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 a 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.

Master of Science in School Psychology

Contact Person: Dr. David Mealor (305) 275-2054

AREA A - CORE		24 Semester Hours
DEP 5057	Developmental Psychology	3 hours
EDF 6401	Statistics for Educational Data	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EEX 5051	Exceptional Children in the Schools	3 hours
EXP 5445	Psychology of Learning and Motivation	3 hours
RED 6335	Reading in the Content Area	3 hours
SPS 6608	Seminar in School Psychology	3 hours
SPS 6918,6909	Research Report	2,1 hours
AREA B - SPECIALIZATION		36 Semester Hours
EAB 5765	Applied Behavior Analysis with Children & Youth	3 hours
EGC 6215	Individual Psycho-Educational Testing I: Binet, WISC-R, WAIS-R	3 hours
EGC 6225	Individual Psycho-Educational Testing II	3 hours
EGC 6435	Theories of Individual Counseling	3 hours
EGC 6436	Techniques of Counseling	3 hours
EGC 6505	Group Procedures in Counseling	3 hours
SPS 6606	School Consultation Techniques	3 hours
SPS 6936	Problems in School Psychology	3 hours
SPS 6946	School Psychology Internship	12 hours
PRE- OR COREQUISITES		
EDA 6061	Organization and Administration of Schools	3 hours
EDF 6517	History & Philosophy of American Education or	3 hours
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:		60

SECONDARY EDUCATION

MASTER OF EDUCATION IN SECONDARY EDUCATION

The M.Ed. degree programs in Secondary Education are designed to extend and update teaching skills for classroom teachers working with adolescent students in a specific academic area at the middle, junior, or high school level.

The program has three areas of emphasis. A "professional core" includes research fundamentals and project, human development or history/philosophy of education, and measurement/evaluation or statistics for educational data. The "curriculum core" focuses on advanced curriculum concepts, research finding in instructional trends, and advanced teaching strategies. Specialization core courses may be selected from offerings in the appropriate discipline department in consultation with the advisor.

Subject field specializations are available in the following areas:

Business-Vocational Education	Science
English Language Arts	Social Sciences
Mathematics	Vocational Education

Business-Vocational Education

Contact person: Dr. Barry Siebert (305) 275-2161 or Dr. Steven Sorg

AREA A - CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
ESE 6918,6909	Research Report	2,1 hours

Choose 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

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

AREA B - VOCATIONAL CORE 9 Semester Hours

BTE 6172	Business Education Curriculum	3 hours
EVT 6264	Administration in Vocational Education	3 hours
EVT 6265	Supervision in Vocational Education	3 hours

AREA C - SPECIALIZATION 12 Semester Hours

BTE 6371	Advanced Business Instruction Techniques	3 hours
BTE 6773	Office Simulation Techniques	3 hours
BTE 6935	Seminar in Business Education	3 hours
BTE 6946	Practicum Business Education	3 hours

AREA D - OPTIONAL ELECTIVES

EVT 5260	Cooperative Programs in Vocational Education	3 hours
EVT 6664	School/Community Relations for Vocational Education	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

EVT 4066	Principles and Practices of Vocational Education	3 hours
RED 6335	Reading in the Content Areas	3 hours

Total Minimum Semester Hours Required: 33

English Language Arts

Contact person: Dr. Nancy McGee (305) 275-2161 or Dr. Steven Sorg

AREA A - CORE 12 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
ESE 6918,6909	Research Report	2,1 hours

Choose 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

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

AREA B - CURRICULUM 9 Semester Hours

Select from the following courses:

LAE 4342	Teaching Language Composition	3 hours
LAE 5464	Literature for Adolescents	3 hours
LAE 6637	English Programs in the Secondary Schools	3 hours
EME 5208	Media and Methods	3 hours
ESE 6235	Curriculum Design	3 hours

AREA C - SPECIALIZATION 12 Semester Hours

Courses to be selected in consultation with the advisor.

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required: 33

Mathematics Education

Contact person: Dr. Doug Brumbaugh (305) 275-2161, or Dr. Steven Sorg

AREA A CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
ESE 6918,6909	Research Report	2,1 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - CURRICULUM CORE		15 Semester Hours
MAE 5637	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 from the following:		
EME 5208	Media and Methods	3 hours
ESE 6218	Curriculum Writing	3 hours
MAE 6648	Designing Instructional Packages for Computer Applications	3 hours
MAE 6145	Mathematics Curriculum	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

AREA C - SPECIALIZATION 6 Semester Hours

Courses to be selected in consultation with an advisor.

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required: 33

Science Education

Contact person: Dr. Margaret While (305) 275-2161, or Dr. Steven Sorg

AREA A - CORE		12 Semester Hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
ESE 6918,6909	Research Report	2,1 hours
Choose 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
Choose one:		
EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
AREA B - CURRICULUM		12 Semester Hours
SCE 5238	Inquiry in the Sciences	3 hours
SCE 6237	Science Programs in Secondary School	3 hours
Electives - Select in consultation with advisor		6 hours
AREA C - SPECIALIZATION		9 Semester Hours
Courses to be selected in consultation with the advisor.		

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required:	33
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Social Science Education

Contact person: Dr. Wentworth Clarke (305 275-2161, or Dr. Steven Sorg

AREA A - CORE	12 Semester Hours
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EDF 6481	Fundamentals of Graduate Research in Education	3 hours
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ESE 6918,6909	Research Report	2,1 hours
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Choose 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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Choose one:

EDF 6401	Statistics for Educational Data	3 hours
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EDF 6432	Measurement and Evaluation in Education	3 hours
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AREA B - CURRICULUM	12 Semester Hours
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ESE 6235	Curriculum Design	3 hours
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ESE 6325	Curriculum Theory	3 hours
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SSE 5334	Inquiry in the Social Sciences	3 hours
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SSE 6636	Contemporary Social Science Education	3 hours
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AREA C - SPECIALIZATION	9 Semester Hours
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Courses to be selected in consultation with the advisor.

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335	Reading in the Content Areas	3 hours
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Total Minimum Semester Hours Required:	33
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MASTER OF ARTS IN SECONDARY EDUCATION

Contact person: Dr. Steven Sorg (305) 275-2161

The Master of Arts degree programs in Secondary Education are for students to become qualified (and certified) to teach in the middle school, junior high, or senior high classroom. It is a comprehensive program for building on the non-education academic area bachelor's degree in business education, English language arts, mathematics, science, social science, science education/health sciences, and extended content. Professional courses involve the areas of human development, history/philosophy of education, measurement and evaluation, curriculum writing, teaching strategies, and practical experience in secondary school classrooms (internship).

Option Specialization: Business Education, English Mathematics, Science, Social Science

AREA A - PROFESSIONAL CORE	18 Semester Hours
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EDF 6155	Lifespan Human Development and Learning	3 hours
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EDF 6432	Measurement and Evaluation in Education	3 hours
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EDF 6481	Fundamentals of Graduate Research in Education	3 hours
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EDF 6517	History and Philosophy of American Education	3 hours
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ESE 6235	Curriculum Design	3 hours
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ESE 6918,6909	Research Report	2,1 hours
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AREA B - SPECIALIZATION 12 Semester Hours
 Courses to be selected in consultation with an advisor. These hours must include a 5000- or 6000-level special methods course.

AREA C - INTERNSHIP 10 Semester Hours
 EDG 6940 Graduate Internship (or equivalent) 3 hours
 EDG 6940 Graduate Internship 7 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program. An undergraduate course or in-service credit may be used to satisfy the requirement.

RED 6335 Reading in the Content Areas 3 hours

Total Minimum Semester Hours Required: 40

Teaching the Gifted Student

AREA A - PROFESSIONAL CORE Minimum required: 12 Semester Hours
 EDF 6481 Fundamentals of Graduate Research in Education 3 hours
 EDF 6517 History and Philosophy of American Education 3 hours
 or
 EDF 6155 Lifespan of Human Development 3 hours
 EDF 6432 Measurement & Evaluation 3 hours
 EGI 6918,6909 Research Report 2,1 hours

AREA B - CURRICULUM CORE Minimum required: 9 Semester Hours

Choose two:

EME 5208 Media & Methods in Teaching 3 hours
 CAP 6613 Utilizing Microcomputers in Education 3 hours
 EDG 6337 Techniques of Game Use in Education 3 hours

Choose one:

MAE 6641 Problem Solving & Critical Thinking Skills 3 hours
 SCE 5238 Inquiry in the Sciences 3 hours
 SSE 5334 Inquiry in the Social Sciences 3 hours
 LAE 6637 English Programs in the Secondary Schools 3 hours

AREA C - CONTENT SPECIALIZATION Minimum required: 9 Semester Hours
 Selected courses in a subject field that meets certification. Specific courses will depend upon each student's academic background.

AREA D - SPECIALIZATION/GIFTED

EEX 5051 Exceptional Children in the Schools 3 hours
 EGI 6051 Understanding the Gifted/Talented Student 3 hours
 EGI 6245 Program Planning & Methodology 4 hours
 EGC 6500 Guidance & Counseling Gifted/Talented 3 hours
 EGI 6938 Seminar:Working with Parents/Professionals 2 hours
 EGI 6946 Practicum 2-6 hours

Total Minimum Semester Hours Required: 47

CERTIFICATION REQUIREMENT

RED 6335 Reading in the Content Areas (or equivalent) 3 hours

Extended Content Program

This program is designed for the student whose objective is to combine an in-depth study of his specialization area in order to teach in the community college. The major emphasis is in content specialization courses.

AREA A - CORE 9 Semester Hours
 EDF 6481 Fundamentals of Graduate Research in Education 3 hours
 EDF 6517 History and Philosophy of American Education 3 hours
 Select one: EME 5208; EDF 6401; EDF 6432; RED 6335 3 hours

AREA B - CURRICULUM	15 Semester Hours
EDG 6940 Graduate Internship	6 hours
ESE 6235 Curriculum Design	3 hours
Advanced methods course in subject field	3 hours
ESE 6918,6909 Research Report	2,1 hours
AREA C - SPECIALIZATION	18 Semester Hours
Courses to be selected in consultation with the advisor.	
Total Minimum Semester Hours Required:	42

VOCATIONAL EDUCATION

Contact persons: Drs. Robert Paugh, Steven Sorg or Larry Hudson (305) (275-2929)

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 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.

MASTER OF EDUCATION IN VOCATIONAL EDUCATION

Administrator Option

AREA A - CORE	12 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education	3 hours
Choose one:	
EDF 6608 Social Factors in American Education	3 hours
EDF 6155 Lifespan Human Development and Learning	3 hours
EDF 6517 History and Philosophy of American Education	3 hours
Choose one:	
EDF 6401 Statistics for Educational Data	3 hours
EDF 6432 Measurement and Evaluation in Education	3 hours
Choose one:	
EDG 6940 Graduate Internship	3 hours
EVT 6918,6909 Research Report	2,1 hours

AREA B - SPECIALIZATION	21 Semester Hours
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Courses to be selected in consultation with the advisor.

EDA 6232 Legal Aspects of School Operation	3 hours
EVT 5685 Competency-Based Vocational Education	3 hours
EVT 6264 Administration in Vocational Education	3 hours
EVT 6265 Supervision in Vocational Education	3 hours
EVT 6664 School/Community Relations for Vocational Education	3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements or as support for degree program.

EVT 4066 Principles and Practices of Vocational Education	3 hours
RED 6335 Reading in the Content Areas	3 hours

An undergraduate or in-service credit may be used to satisfy the requirement.

Total Minimum Semester Hours Required: 33

Master Teacher Option

AREA A - CORE	12 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education	3 hours

Choose 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

Choose one:

EDF 6401	Statistics for Educational Data	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours

Choose one:

EDG 6940	Graduate Internship	3 hours
EVT 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION

21 Semester Hours

Courses to be selected in consultation with the advisor.

COREQUISITE

EVT 4066	Principles and Practices of Vocational Education	3 hours
RED 6335	Reading in the Content Areas	3 hours

Total Minimum Semester Hours Required: 33

MASTER OF ARTS IN VOCATIONAL EDUCATION

General Vocational Option

AREA A - CORE

9-13 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
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Choose one:

EDF 6155	Lifespan Human Development and Learning	3 hours
EDG 6517	History and Philosophy of American Education	3 hours
EDF 6608	Social Factors in American Education	3 hours

Choose one:

EDG 6940	Graduate Internship	3-7 hours
EVT 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION

30 Semester Hours

EVT 4066	Principles and Practices of Vocational Education	2-4 hours
EVT 4368	Advanced Teaching Techniques for Vocational Education	2-4 hours
EVT 5561	Student Guidance in the Vocational Program	2-3 hours
EVT 5564	Student Vocational Organizations	2-3 hours
EVT 5685	Competency-Based Vocational Education	2-4 hours
EVT 6664	School/Community Relations for Vocational Education	2-4 hours

Other education courses at the 6000 level must be selected in consultation with an advisor. 8-18 hours

Total Minimum Semester Hours Required: 39-43

Health Related Option

AREA A - CORE

9 Semester Hours

EDF 6481	Fundamentals of Graduate Research in Education	3 hours
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Choose 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

Choose one:

EDG 6940	Graduate Internship	3-7 hours
EVT 6918,6909	Research Report	2,1 hours

AREA B - SPECIALIZATION		19-23 Semester Hours
EVT 4066	Principles and Practices of Vocational Education	3 hours
EVT 4368	Advanced Teaching Techniques for Vocational Education	3 hours
EVT 5315	Applied Clinical Teaching Techniques in Vocational Education	3 hours
EVT 5316	Clinical Coordination for the Health Occupations Teacher	3 hours
EVT 5685	Competency-Based Vocational Education	2-4 hours
EVT 6265	Supervision in Vocational Education	3 hours
EVT 6664	School/Community Relations for Vocational Education	2-4 hours

AREA C - ELECTIVES **7-11 Semester Hours**

Courses must be at the 6000 level and selected in consultation with an advisor.

Total Minimum Semester Hours Required: **39**

LIST OF COURSES — COLLEGE OF EDUCATION

ARE 5251 Art for Exceptionalities **3 cr (2,1)**

Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.

ARE 5255 Art in Recreation **3 cr (2,1)**

Art activities and experiences appropriate for use in playground, leisure services, occupational orientation and other recreational areas.

ARE 5358 Found Arts **3 cr (3,0)**

PR: ARE 4440 and ARE 4443 or C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

ARE 5444 Jewelry Making in Schools **3 cr (3,0)**

PR: C.I. Jewelry making appropriate for school age children using standard public school equipment.

ARE 5648 Contemporary Visual Arts Education **3 cr (3,0)**

PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school Visual Arts Programs.

ARE 6455 K-12 Art Instructional Materials I **3 cr (3,0)**

Advanced application of two-dimensional, three-dimensional, and graphics materials to appropriate levels of instruction in elementary and secondary schools.

ARE 6456 K-12 Art Instructional Materials II **3 cr (3,0)**

Continuation of ARE 6455.

ART 5109C Crafts Design **3 cr (2,1)**

Crafts design and production, including the use of rigid, flexible, and linear materials.

BTE 6172 Business Education Curriculum **3 cr (3,0)**

PR: Basic Teacher Certificate or C.I. Curriculum planning and development; objectives, innovations, problems and issues in contemporary business programs.

BTE 6371 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 6773 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. School organization patterns, kindergarten through junior college. Study of functions such as scheduling, staffing, community relations, design and operation of facilities, financial management.
- 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 6205 School-based Management** 3 cr (3,0)
PR: C.I. Administrative task analysis, flowcharting, casting, work scheduling, systems theory, systems design feedback networks, P.P.B.S. Applicable to systematic planning for educational enterprises.
- 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, 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 6330 Administration of Pupil Personnel Services** 3 cr (3,0)
PR: C.I. Administration of the school census, grade placement, grade promotion, the school guidance program and other pupil related services.

- EDA 6502 Organization and Administration of Instructional Programs** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Purpose and functions of school learning centers, curricula, and establishment of educational priorities, review and analysis of various grouping patterns for individualizing instruction.
- 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 6925 Administrative Extern Workshop** 3 cr (3,0)
PR: C.I. Workshop dealing with various issues in education administration, stressing the administrator's involvement in developing more effective relationships with pupil staff and community.
- 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 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 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 6137 The Adolescent and Young Adult** 3 cr (3,0)
PR: C.I. Developmental characteristics from puberty through young adulthood as they relate to classroom learning, counseling, administration and curriculum design. Implications for parents and educators are stressed.
- EDF 6142 Thinking Processes and Styles in the Classroom** 3 cr (3,0)
PR: C.I. Application of cognitive models and data to the means that teachers might employ in directing academic achievement and fostering progress toward other educational goals.
- 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 6232 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 6233 Analysis of Classroom Teaching** 3 cr (3,0)
PR: EDF 6481 or C.I. Analyses of verbal and non-verbal behaviors of teachers and their effect upon classroom instruction and learning.
- 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 influential statistics, interpretation of results.
- EDF 6403 Quantitative Foundations of Educational Research** 3 cr (3,0)
PR: EDF 6401 or C.I. Examination of appropriate methods in applied educational contexts. Consideration of analysis strategies for educational data, emphasis on identification and interpretation of findings.
- EDF 6432 Measurement and Evaluation in Education** 3 cr (3,0)
PR: EDF 6481 or C.I. Theory and rationale of testing instrument construction, application of test results in the educational setting, analysis of standardized tests.
- EDF 6463 Summative Analysis for Educational Research and Evaluation** 3 cr (3,0)
PR: EDF 6401. Applications of summative evaluation for education: interpretation of impact data, measurement scales, survey and record data.
- EDF 6481 Fundamentals of Graduate Research in Education** 3 cr (3,0)
PR: C.I. Computer applications to educational research, elementary design and data analysis, effective use of library, reading and interpreting research in education.
- EDF 6486 Research Design in Education** 3 cr (3,0)
PR: EDF 6403 or C.I. An examination of methodological techniques for specific educational problems. Intended for students in the process of designing independent research studies.
- EDF 6517 History and Philosophy of American Education** 3 cr (3,0)
PR: C.I. A critical analysis of the conceptual and operative educational systems developed in the United States of America.
- EDF 6608 Social Factors in American Education** 3 cr (3,0)
Analysis of general and specific aspects of American education as they relate to social and behavioral sciences.
- EDF 6931 Educational Research: Presentation and Critique** 2 cr (2,0)
PR: EDF 6486. Formal presentation and evaluation of student's completed investigation of a problem in educational research.
- 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 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 6345 Teaching Skills Development** 3 cr (3,0)
Development of interactive skills of teachers with large, small, and tutorial groups. To include non-verbal communicating lecture techniques and the dynamics of discussion and problem solving.
- 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 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 6216 Curriculum Development for the Disadvantaged Junior College Student** 3 cr (3,0)
PR: C.I. Review and consideration of significant factors affecting development of curriculum for disadvantaged students in the junior colleges.
- 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 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 6111 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.
- EDS 6123 Educational Supervisory Functions** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Analysis of school supervisory functions in human relations, leadership, personnel administration and in-service education for instructional improvement.
- EDS 6130 Educational Supervisory Techniques** 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. and EDS 6123. Development of techniques in observation, group processes, communication and evaluation for assessment of school personnel and programs.
- EDS 6160 Personnel Management in Education** 3 cr (3,0)
PR: C.I. Working with the teacher personnel; recruitment, selection, orientation, in-service education, teacher morale, teacher evaluation and collective negotiations.
- 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 6215 Development of a Personalized Program for Children with Behavior Disorders	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Study of various approaches to use in teaching children with behavior disorders including precision teaching, behavior management techniques and interpersonal communications skills.	
EED 6226 Theory and Application for EH	3 cr (3,0)
PR: EEX 6883 or 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.	
EED 6247 Educational Programming for Children with Behavior Disorders	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. A study of existing models and theories of educational programs for children with behavior disorders.	
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 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 Curriculum Prescriptions for the Exceptional Population	3 cr (3,0)
Curriculum design, interpretation and communication of test results, and analysis of available software for the exceptional populations plus an examination of learning strategies.	
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 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.	
EEX 6883 Clinical Practice	3 cr (3,0)
PR: C.I. Application of class content in teaching experience with selected category of exceptional students.	
EGC 5005 Introduction to Guidance and Human Services	3 cr (3,0)
PR: Completion of Phase II of Education Professional Preparation or C.I. A basic course presenting an overview of the philosophy, organization, administration and operation of guidance and human services.	
EGC 5033 Guiding Human Relationships	3 cr (3,0)
PR: Senior Standing or Basic Teacher Certificate. Human relationship skills which will enhance intra- and inter-personal relating skills in classrooms.	
EGC 6045 Counseling with Children	3 cr
PR: EGC 6416, 6447, EDF 6113, or equivalent.	
EGC 6055 Student Personnel Services in Higher Education	3 cr
PR: EGC 6005, 6057.	
EGC 6057 The College Community and the Student	3 cr
PR or CR: EGC 6005.	

- EGC 6215 Individual Psycho-Educational Testing I: Binet, WISC-R, WAIS** 3 cr (3,1)
PR: C.I. Analysis of test theory and practice in administration, scoring, interpretation and case report writing.
- 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 Vocational and Career Development Procedures** 3 cr (2,1)
PR: EGC 5005 or EGC 6426, EDF 6481 or C.I. Forces which affect career choice and shape personal development; vocational counseling, career education and parent-student-school interrelationships.
- EGC 6409 Current Trends in Counseling** 3 cr (3,0)
PR: EGC 5005 or EGC 6426 or C.I. Current trends in counseling including neurolinguistics, stress, counseling special populations and human sexuality. Themes in accordance with rapid changes in 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 Introduction to Community Counseling** 3 cr (3,0)
PR: C.I. Examine the emergence of community counseling services and the involvement of current treatment trends within public and private community counseling settings.
- EGC 6435 Theories of Individual Counseling** 3 cr (2,1)
PR: EGC 5005 or EGC 6426, EDF 6481, or C.I. Major theories and approaches to school counseling, correlating them with counterpart theories of personality and learning.
- EGC 6436 Techniques of Counseling** 3 cr (1,2)
PR: EGC 6435 or C.I. The nature of the counseling and its relationships to theoretical concepts.
- EGC 6438 Play Counseling and Play Process with Children** 3 cr
PR: EGC 6416, 6447, EDF 6113 or equivalent.
- EGC 6446 Counseling Practicum** 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-vocational-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 and Their Families** 3 cr (1,2)
PR: EGC 5005 or EGC 6426 or C.I. An introduction to the application of counseling principles with various special populations and their families.
- EGC 6467 Counseling Older Persons and Their Families** 3 cr (3,0)
PR: EGC 5005 or EGC 6426 or C.I. A basic course presenting an overview of the nature, process, and theory of counseling older persons and their families.
- 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 (1,2)
PR: EGC 6436, EGC 6235 or EGC 6215, EGC 6317 or C.I. 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 Guidance and Personnel Programs** 3 cr
PR: EGC 6416.
- EGC 6706 Consultation and Staffing** 3 cr (3,0)
PR: EGC 6505 or C.I. A course to help the counselor understand their role as a consultant and to learn the benefit of case staffing.
- EGC 7055 Student Personnel Services in Higher Education** 3 cr (3,0)
PR: C.I. Services and activities in student affairs, financial aid; admissions; records; registration; housing; placement; health; clinical and counseling services.
- EGC 7935 Seminar in Guidance and Student Personnel Work** 3 cr (3,0)
PR: C.I. Exploring major issue and problems in relation to current research, trends and developments.
- 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.
- EGI 6941 Supervised Practicum with Gifted/Talented Students** 2-6 cr (0,2-6)
PR: EGI 6051, EGI 6245 and C.I. Supervised observation and teaching of students identified as gifted/talented.
- ELD 6112 Foundation and Diagnosis of Learning Disabilities** 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 learning disabled child.
- ELD 6323 Theory and Application for SLD** 3 cr (3,0)
PR: EEX 6883 or 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 5054 Instructional Technology: 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 5208 Media and Methods in Teaching** 3 cr (2,1)
PR: Basic Teacher Certificate or C.I. Practicum on various media in the classroom with emphasis on student film making and production.
- EME 6053 Current Trends in Instructional Technology** 3 cr (3,0)
PR: EME 6613. Survey of current trends and issues in instructional technology. Research reviewed and the findings related to current practices.

- EME 6403 Computer Assisted Instruction** 3 cr
PR: LIS 5262. Utilization of Basic, Pascal, Pilot, or Logo to produce CAI ranging from drill and practice through simulation.
- EME 6413 Educational Programming** 3 cr (3,0)
PR: C.I. Advanced educational programming. Random access, sequential files, graphics advanced interactive techniques, storage and processing of student response files, advanced CAI procedures, algorithmization in learning and instruction.
- EME 6415 Courseware Design** 3 cr (3,0)
PR: C.I. Introduction to design, development, evaluation of microcomputer courseware. Application of microcomputer programming procedures, contemporary learning theories, and instruction-learning strategies to the design of computer assisted instructional materials.
- EME 6613 Instructional System Design** 3 cr (3,0)
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 Technology** 3 cr (3,0)
Provides opportunities for students to examine parameters, problems, and areas of importance in the management of instructional technology.
- EMR 6205 Theory and Application for EMH** 3 cr (3,0)
PR: EEX 6883 or 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 6261 Career Planning for the Mentally Handicapped** 2 cr (2,0)
PR: Basic Teacher Certificate. Instruction and practice in career planning with specific activities in homemaking skills, industrial arts, and job exploration.
- EMR 6362 Classroom Organization and Curriculum for Teaching the Mentally 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.
- EPH 5335 Physical and Sociological Implications of Handicapping Conditions** 3 cr (3,0)
Overview of physical and sociological factors which may contribute to delayed learning or physical impairments in the exceptional populations. Physical interventions and first-aid practices are examined.
- ESE 5214 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: Graduate standing or C.I. Application of curriculum evaluation techniques to instructional programs.
- 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 5685 Competency-Based Vocational Education** 2-4 cr (2-4,0)
PR: Basic Teacher Certificate or C.I. Achievement of teacher competencies unique to the installation and management of competency-based vocational training programs in secondary and post-secondary schools and community colleges.
- EVT 5817 Management of Vocational Programs** 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.	
LAE 5464 Literature for Adolescents	3 cr (3,0)
PR: Senior standing or C.I. Selecting and evaluating books for adolescents with emphasis on the use of literature in the development of young people.	
LAE 6616 Trends in Language Arts Education	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Historical development and trends; English usage systems; materials; instructional strategies.	
LAE 6637 English Programs in the Secondary School	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Concepts, problems and advanced topics.	
LAE 6714 Investigation in Children's Literature	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Learning through the utilization of children's literature; literature analysis and evaluation; story telling skill development; visual and reference materials.	
LEI 6443 Recreation	3 cr (2,1)
A comprehensive study of public, private and school recreation programs.	
LIS 5262 Computer Applications in Instructional Technology	3 cr (3,0)
Emphasis on the applications of the computer for the media specialist and instructional technologist.	
LIS 5312 Advanced Production Techniques	3 cr (3,0)
Advanced skills in graphic, photographic, and audio production. Integration of media into instructional packages.	
LIS 5454 Administrative Principles in Media Centers	3 cr (3,0)
Planning, organizing, directing, supervising and budgeting in school media center. Personnel, public relations, facilities design, and evaluation.	
LIS 6313 Multi-Media Message Design	3 cr (3,0)
Principles of communication, learning theory, and research in instructional technology applied to the design of mediated instructional messages.	
LIS 6509 Seminar in Educational Media	3 cr (3,0)
Survey of current trends and issues in educational media. Research reviewed and the findings related to current practices.	
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 5395 Teaching the Metric System	3 cr (3,0)
Linear, area, volume, mass, force, and temperature measures from the metric system will be studied in relation to teaching aids, methods, and content, (K-12).	
MAE 5637 Laboratory Programs in Mathematics	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 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 6549 Practicum in Mathematics Instruction, K-12** 1-3 cr (0,1-3)
PR: MAE 6517; CR: MAE 6899. Supervised diagnostic instruction with children; selection of instructional materials and techniques. May be repeated for credit.
- MAE 6641 Problem Solving and Critical Thinking Skills** 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 6648 Designing Instructional Packages for Computer Applications** 3 cr (3,1)
PR: CAP 6613 or C.I. The applications of computer technology to mathematics instruction, K-12. Testing, drill programs, tutorials, problem solving, and simulations will be considered.
- 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.)
- 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 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 Exercise Lifestyles - Adherence and Compliance** 3 cr (3,0)
An analysis of alternative lifestyles associated with the corporate wellness movement.
- PET 6086 Exercise Intervention and Risk Hazards** 3 cr (3,0)
Prevention of select major risk hazards through exercise intervention.
- PET 6146 Current Trends and Philosophical Foundations of Physical Education** 3 cr (3,0)
A comprehensive analysis of current trends, forces and events leading to the development of contemporary concepts in physical education.
- PET 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 and anaerobic 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 6405 Administration of Physical Education and Athletic Program	3 cr (3,0)
Study of current problems in the administration of school physical education and athletic programs.	
PET 6416 Administration of Corporate Wellness Programs	3 cr (3,0)
Administrative implications for the development of a corporate wellness program.	
PET 6425 Curriculum Design in Physical Education	3 cr (3,0)
Study of physical education and its existing organization. Emphasis on ethics, values, principles and issues.	
PET 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 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 5337 Reading in the Secondary School	3 cr (3,0)
PR: Basic Teacher Certification or C.I. Nature of the adolescent reader; organizational patterns, principles, and procedures; diagnostic and remediation materials.	
RED 5514 Diagnosis and Treatment of Reading Difficulties	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 6335 Reading in the Content Areas	3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Identification and evaluation of reading skills, diagnosis of reading problems and development of methods and materials to increase student reading performance.	
RED 6515 Remedial Reading Practicum	2-6 cr (1,2-6)
PR: RED 5514 or equivalent. A remedial reading practicum for classroom teachers and those preparing to become special reading teachers. Emphasis on diagnostic reading tests and corrective materials and strategies. (May be repeated for credit.)	
RED 6746 Management of Reading Programs	3 cr (3,0)
Overview of K-12 reading instruction goals and program management models; role of reading supervisor and in-service needs assessment and delivery.	
RED 6845 Clinical Diagnosis and Remediation of Reading Difficulties	3 cr (3,0)
PR: RED 5514 or C.I. Administration and interpretation of individual tests; factors contributing to reading difficulties; case studies; instructional techniques for the severely disabled reader.	
RED 6846 Clinical Reading Practicum	2-3 cr (0,2-3)
PR: RED 6515 and RED 6845 or C.I. Clinical evaluation and remediation of severely disabled readers in a laboratory setting. Parent interview; case reports.	

SCE 5238 Inquiry in the Sciences 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Teaching science by inquiry in the secondary school and development of inquiry lessons.

SCE 6237 Science Programs in Secondary School 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Study of historical development and current trends; analysis of science curricula, materials.

SCE 6616 Trends in Elementary School Science Education 3 cr (3,0)
PR: Basic Teacher Certification or C.I. Study of historical development and current trends; analysis of science curricula, materials.

SPS 6606 School Consultation Techniques 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 6936 Problems in School Psychology 3 cr (3,0)
PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in school systems.

SPS 6949 School Psychology Internship 2-6 cr (0,2-6)
PR: Graduate admission and C.I. Supervised placement in school setting.

SSE 5334 Inquiry in the Social Studies 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Teaching by inquiry in the new social studies with a development of inquiry episodes.

SSE 5440 Law Education Studies Materials 3 cr (3,0)
PR: Senior standing or C.I. Design organization and development of educational materials relating constitutional law concepts to citizenship for schools.

SSE 6441 Florida Law Education Studies 3 cr (3,0)
Creative planning and evaluation of law education programs for schools in Florida.

SSE 6617 Trends in Elementary School Social Studies Education 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Historical development and current trends, strategies for inquiry instruction, intellectual, social and personal dimensions of social studies.

SSE 6636 Contemporary Social Science Education 3 cr (3,0)
PR: Basic Teacher Certificate of C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.

ARE, EDA, EDE, EEX, EGC, EME, ESE, EVT, MAE, MUE, PET, RED or SPS prefixes are used for the following:
6909 Research

EDG, EGC, EME, MAE, MUE, PET, or RED prefixes are used for the following:
6946 Internships, Practicums, Clinical Practice

EDA or EDG prefixes are used for the following:
7980 Doctoral Dissertation

COLLEGE OF ENGINEERING

The College of Engineering offers the Master of Science, the Master of Science in Engineering, the Master of Civil Engineering, the Master of Science in Environmental Systems Management and the Doctor of Philosophy degrees.

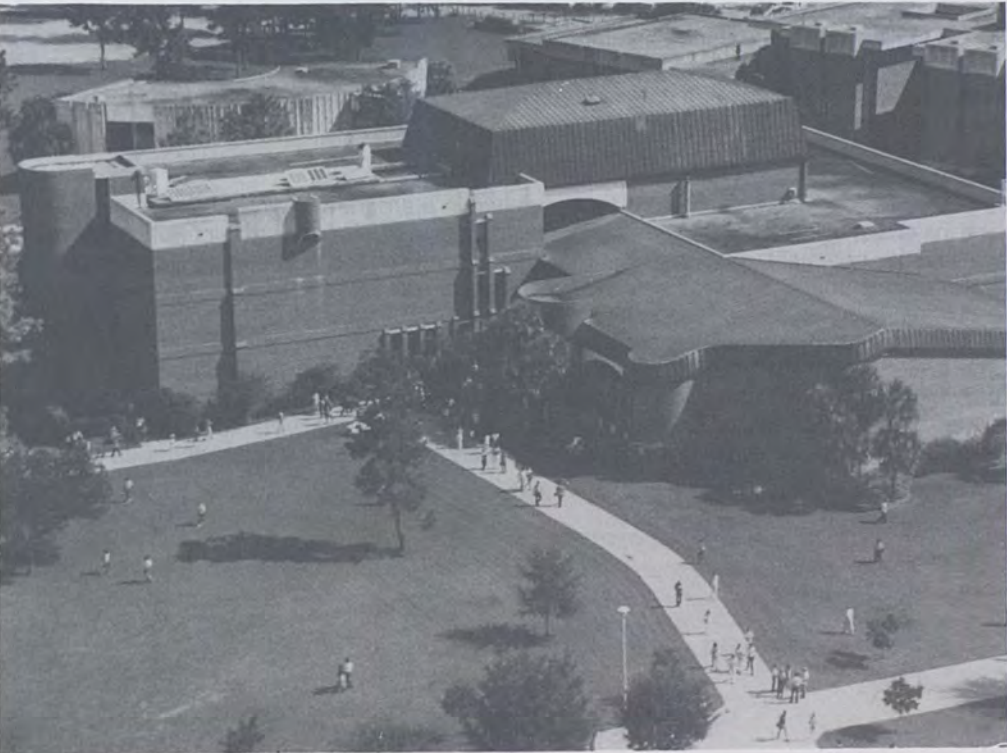
The master's programs are designed to provide for advanced professional engineering education (M.S.E.) or specialized education in selected areas (M.S., M.C.E. or M.S.E.S.M.). It is the objective of the College of Engineering to produce well-qualified, competent graduates from outstanding accredited programs for the professional practice of engineering and to conduct research and service responsive to the needs of the State of Florida and the Nation.

The Ph.D. programs provide the opportunity for advanced graduate preparation in the areas of civil engineering, computer engineering, electrical engineering, environmental engineering, industrial engineering, and mechanical engineering. These programs provide direct support for the emergence of the Central Florida area as one of the national centers of high technology industry. The program is especially accessible to the place-bound engineer who would otherwise have difficulties in fulfilling his professional career objectives.

COLLEGE ADMINISTRATION

Robert D. Kersten	Dean
George F. Schrader	Associate Dean
Bruce E. Mathews	Assistant Dean
J. Paul Hartman	Assistant Dean

Bruce E. Mathews.....Graduate Program Coordinator
Office: CB 281, Phone 275-2455



COLLEGE OF ENGINEERING DEPARTMENTS

CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES

D.L. Block, Ph.D.; P.E.	FSEC Director and Professor
W.F. Carroll, Ph.D.; P.E.	Professor
J.P. Hartman, Ph.D.; P.E.	Assistant Dean and Professor
D.R. Jenkins, Ph.D.; P.E.	Chairman and Professor
R.K. Kersten, Ph.D.; P.E.	Dean and Professor
M.P. Wanielista, Ph.D.; P.E.	Professor
Y.A. Yousef, Ph.D.; P.E.	Professor
B.F. Beck, Ph.D., P.G.	FSRI Director and Associate Professor
W.E. Carroll, Ph.D.; P.E.	Associate Professor
C.D. Cooper, Ph.D.; P.E.	Associate Professor
C.M. Head, Ph.D.; P.E.	Associate Professor
T.J. Padden, Ph.D.; P.E.	Associate Professor
J.S. Taylor, Ph.D.; P.E.	Associate Professor
J.D. Dietz, Ph.D.; P.E.	Assistant Professor
S.S. Kuo, Ph.D.; P.E.	Assistant Professor
D.S. Leftwich, Ph.D.; P.E.	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, transportation planning and networks, construction engineering, and water resources. Faculty research interests include geotechnical studies of subsurface conditions done in part in connection with the Florida Sinkhole Research Institute. 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 interest include finite element methods, mechanics of composite structural materials, and extreme loads on structures. 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 waste management, atmospheric pollution control, and storm-water management. The research results of faculty members have been applied to social problems; however, basic research is being done as well.

Students with strong science or engineering backgrounds have a variety of research areas and levels of interest which they can pursue. Those completing the program find job opportunities in federal, state and local governments, consulting, industry, and posteducational areas. The Environmental Engineering education program concerns itself with prevention and correction of undesirable technological effects on the natural and man-made environments.

COMPUTER ENGINEERING

C.S. Bauer, Ph.D.; P.E.	Chairman and Professor
B.W. Patz, Ph.D.; P.E.	Professor
H.I. Klee, Ph.D., P.E.	Associate Professor
D.C. Linton, Ph.D.; P.E.	Associate Professor

In contemporary professional engineering practice, and in research and development activities, there is an increasing need for engineers with a high degree of training and capability in the application of mathematics and computers in the modeling, simulation and solution of complex technical problems.

The current research interests of the program include robotics, computer graphics, training simulators, software engineering, computer applications, stochastic modeling, simulation, digital signal processing, and artificial intelligence.

ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES

E.E. Erickson, Ph.D.; P.E.	Professor
R.C. Harden, Ph.D.; P.E.	SOC Director and Professor
B.E. Mathews, Ph.D.; P.E.	Assistant Dean and Professor
R.L. Phillips, Ph.D.	Professor
H.C. Towle, Ph.D.; P.E.	Professor
N.S. Tzannes, Ph.D.	Chairman and Professor
R.L. Walker, Ph.D.; P.E.	Professor
D.C. Malocha, Ph.D.	Associate Professor
R.J. Martin, Ph.D.	Associate Professor
R.N. Miller, Ph.D.; P.E.	Associate Professor
B.E. Petrasko, D.Eng.	Associate Professor
R.A. Walters, Ph.D.	Associate Professor
M. Belkerdid, Ph.D.; P.E.	Assistant Professor
G.D. Boreman, Ph.D.	Assistant Professor
H.K. Brown, Ph.D.	Assistant Professor
C.G. Christodoulou, Ph.D.	Assistant Professor
M.G. Harris, D.Sc.; P.E.	Assistant Professor
P.F. Wahid, Ph.D.	Assistant Professor

The M.S.E. in Electrical Engineering is available to students with an undergraduate degree in electrical engineering and offers the following areas of specialization: control systems, communication systems, digital signal processing, digital systems, electronics, and electro-optics. Study is offered in the areas of electromagnetics and microelectronics. The M.S. in electrical systems and sciences is available to students with an undergraduate degree in an area related to electrical engineering. A program of study is constructed which complements the students area of undergraduate study. The Ph.D. in electrical engineering is intended for exceptional students who have a master's degree and desire to work in an area of specialization which is supported by major faculty strength and research activities.

Research interests of the faculty include analog electronics, antennas, communication systems, digital signal processing, digital systems architecture, electromagnetic fields, instrumentation circuits, low noise amplifiers, microelectronics, microprocessor applications, microwave solid state devices, optical communications, optical detection systems, statistical optics propagation through turbulence, and surface acoustic wave devices and systems.

INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS

<i>J.E. Biegel, Ph.D.; P.E.</i>	Professor
<i>G.H. Brooks, Ph.D.; P.E.</i>	Professor
<i>G.E. Schrader, Ph.D.; P.E.</i>	Associate Dean and Professor
<i>W.W. Swart, Ph.D.; P.E.</i>	Chairman and Professor
<i>G.E. Whitehouse, Ph.D.; P.E.</i>	Professor
<i>Y.A. Hosni, Ph.D.; P.E.</i>	Associate Professor
<i>J.A. Sepulveda, Ph.D.; P.E.</i>	Associate Professor

The Departmental faculty is engaged in a wide range of research activities reflecting the broad scope of the Industrial Engineering profession. In the microcomputer area projects involve development of engineering work stations, the development of industrial engineering oriented software, and the use of microprocessors as controllers for a wide range of industrial processes.

Projects in the Human Engineering areas include the development of task analysis computer models for the improvement of space-center operations, the investigation of human factors relating to the development of real time simulation and training devices, and the development of predictive models for heat fatigue in human subjects.

In the manufacturing area, research projects are under way in the development of expert systems for manufacturing, the economic attractiveness of flexible manufacturing systems, robotic vision systems, and the development of automated testing systems.

In the Operations Research area, research projects are under way in the generic simulation of Navy management information systems, project scheduling for the Space Station, predictor models for long term severity and morbidity for spinal cord injury patients, computer simulation models to evaluate management strategies to face Medicare's prospective payment systems, and automation and robotic applications in the restaurant industry. In addition, several research projects are under way to develop more effective solution algorithms for a wide variety of industrial engineering related problems.

In the Simulation and Training Systems area the faculty has substantial involvement with the University's Institute for Simulation and Training Technology. In addition, close teaching and research relationships exist between the department and the Naval Training Systems Center and other industries located in the Central Florida area.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

<i>B.E. Eno, Ph.D.; P.E.</i>	Professor
<i>E.R. Hosler, Ph.D.; P.E.</i>	Professor
<i>S.L. Rice, Ph.D.; P.E.</i>	Chairman and 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>	Associate Professor
<i>P.J. Bishop, Ph.D.; P.E.</i>	Associate Professor
<i>F.S. Gunnerson, Ph.D.; P.E.</i>	Associate Professor
<i>A.H. Hagedoorn, Ph.D.; P.E.</i>	Associate Professor
<i>S.M. Metwalli, Ph.D.</i>	Associate Professor
<i>F.A. Moslehy, 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>V.H. Desai, Ph.D.</i>	Assistant Professor
<i>L. Kitis, Ph.D.</i>	Assistant Professor

Major fields of emphasis in the Department of Mechanical Engineering and Aerospace Sciences include alternative energy sources (photovoltaic, thermo-electric, thermionic, wind), non-linear mechanics (dynamic stability), propulsion, combustion, experimental mechanics (holographic interferometry, laser speckle metrology, signature analysis), tribology, materials science, mechanics of materials (finite element and boundary element methods), heat transfer, multi phase flow, computational fluid mechanics, hypersonics, vibrations, nuclear power, computer-aided-engineering, and expert systems in mechanical engineering.

Current research projects include studies on the effects of heavy rainfall on aircraft performance; cogeneration systems using thermal storage; heat transfer in materials processing; stress corrosion cracking; degradation of biomechanical implant materials; thermal resistance of building envelopes; waste heat recovery and utilization; dynamic stability of non-linear systems; critical heat flux in nuclear reactors; boiling heat transfer; finite element analysis in creep, fatigue and fracture; magnetic flux treatment of condenser cooling water; pressure transients in cryogenic transport; dynamic analysis of flexible mechanisms; image recognition in problems of large deformation; modal analysis; random signal analysis; surface roughness measurement by laser speckle image processing; temperature measurement and analysis using boundary element techniques; acoustic emission analysis; displacement field measurement in tribosystems; crashworthiness of aircraft structures; vehicle design; biomechanical impact behavior prediction; chemomechanical phenomena in machining processes; and wear of ceramic tools and of dental restorative materials.

The Department of Mechanical Engineering and Aerospace Sciences collaborates in teaching and research with other engineering departments within the College of Engineering, with the Florida Solar Energy Center, with the Center for Research in Electro-Optics and Lasers, and with various other institutes and industries in the Central Florida Research Park, at Cape Canaveral and at NASA's Kennedy Space Center.



COLLEGE OF ENGINEERING — MASTER'S DEGREES

ADMISSION

University Admission Requirements

The Graduate Record Examination (GRE) is required of all graduate students. An applicant must meet the minimum graduate admission criteria of a GPA of 3.0 (4.0=A) on the last two years of undergraduate degree work or score 1000 on the quantitative-verbal sections of the GRE.

College Admission Requirements

In addition to the above minimum criteria University admission requirements, College admissions require the following:

- A minimum GPA of 2.8 or better on the last two years of undergraduate degree work independent of the GRE score.
- Applicants for the M.S.E. program must have the B.S.E. or equivalent from an ABET accredited engineering curriculum in the appropriate discipline area.
- Applicants for the M.S. or M.S.E.S.M. programs must present baccalaureate credentials appropriate to the specialized area of study.
- All applicants whose native language is not English must score at least 550 on the Test of English as a Foreign Language (TOEFL).

UNIVERSITY GRADUATE REGULATIONS

See the University Graduate Regulations section of this catalog.

As of Fall 1977, it is the policy of the Professional College of Engineering that all graduates from the Engineering Curriculum who receive the Bachelor of Science in Engineering or Master of Science in Engineering degrees must have taken the Fundamentals of Engineering examination (Examination of the Florida State Board of Professional Engineers or equivalent) as a graduation requirement.

Course work more than five years old cannot be used to satisfy degree requirements unless waived by the Dean of Engineering.

Half of the course work must be at the 6000 level.

MASTER OF SCIENCE IN ENGINEERING — M.S.E.

Advanced professional engineering competencies are achieved through the Master of Science in Engineering program. This program is intended for those who have attained a bachelor's degree in the engineering discipline in which they wish to continue study at the graduate level. The M.S.E. degree program consists of a core requirement which maintains breadth in a discipline and also an in-depth specialization in a subdiscipline area.

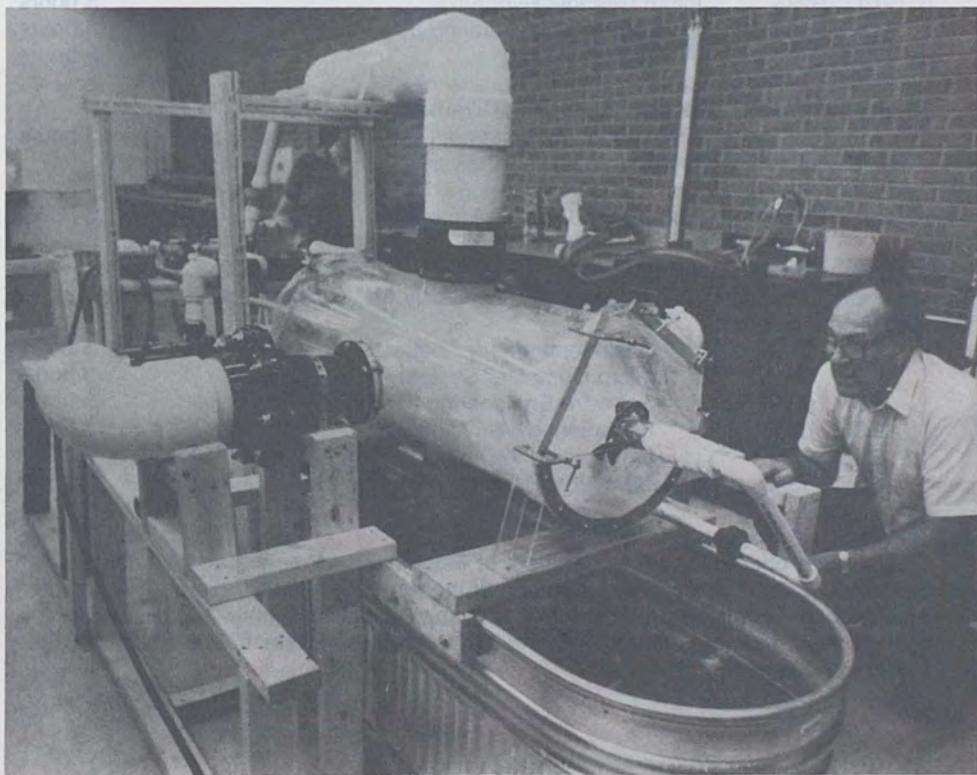
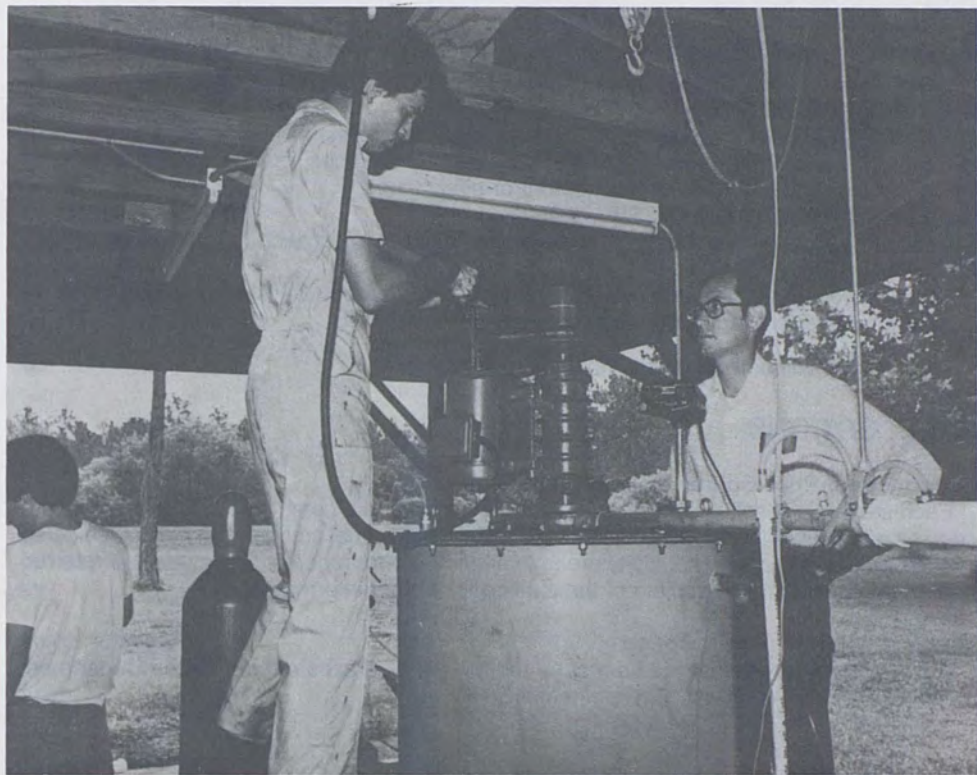
M.S.E. options are offered by the following departments:

M.S.E. options

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

Engineering Departments

Civil Engineering & Environmental Sciences
Computer Engineering
Electrical Engineering & Communications Sciences
Civil Engineering & Environmental Sciences
Industrial Engineering & Management Systems
Industrial Engineering & Management Systems
Mechanical Engineering & Aerospace Sciences



M.S.E. DEGREE REQUIREMENTS

REQUIRED OPTION CORE COURSES

12-20 Semester Hours

See Departmental Option Core course requirements in the following section.

RESTRICTED ELECTIVES

4-15 Semester Hours

Additional subdiscipline-specialty courses such as additional advanced mathematics, computer systems, natural sciences, engineering sciences, or appropriate supportive areas (beyond B.S.E. core requirement or equivalent).

RESEARCH REPORT OR THESIS

3-6 Semester Hours

Students must be registered in the semester in which application for graduation is filed.

EXAMINATION

Oral defense of research report or thesis is required. Satisfactory completion of comprehensive examination may be required.

Total Minimum Semester Hours Required:

30

M.S.E. OPTIONS

Departmental Core Course Requirements

Each student will select, with the approval of his graduate committee, departmental core courses as noted below for the professional options. Additional course work may be selected in one of the subdiscipline specialty areas to provide program depth. The student is referred to the course description section of the catalog for further information.

M.S.E. Civil Engineering Option

15 Semester Hours

The core requirements will be met by the following courses offered by the Department of Civil Engineering and Environmental Sciences.

a.	CES 6606	Steel Design	3 hours
		or	
	CES 6707	Concrete Design	3 hours
b.	ECI 6235	Open Channel Hydraulics	3 hours
c.	ECI 5306	Geotechnical Engineering II	3 hours
d.	TTE 5204	Traffic Engineering	3 hours
		or	
	TTE 5720	Design Elements of Transportation Transportation Systems	3 hours
e.	CES 5107	Matrix Structural Analysis	
		or	
	ECI 6324	Foundation Engineering	3 hours

M.S.E. Computer Engineering Option

18 Semester Hours

The core requirements for all students will be met by the following courses offered as an Interdisciplinary program.

	ECM 5135	Engineering Math Analysis I	3 hours
	ECM 5505	Micro Computer Systems	3 hours
	ECM 5806	Software Engineering I	3 hours
	ECM 6235	Engineering Math Analysis II	3 hours
	EEL 5365	Introduction to Digital Systems	3 hours
	EEL 6349	Computer Systems Design	3 hours

M.S.E. Electrical Engineering Option

12-15 Semester Hours

Courses are offered by the Department of Electrical Engineering and Communication Sciences. At least *two courses* from one of the following specialization areas: communications systems, control systems, digital signal processing, digital systems, electronics, and electro-optics. In addition, each student will select courses from each of the three areas listed below:

a. EEL	6371	Amplifier Design	3 hours
		or	
EEL	6372	Operational Amplifiers	3 hours
b. EEL	5173	Signal and System Analysis	3 hours
		or	
EEL	5442	Random Processes	3 hours
		or	
ECM	5806	Software Engineering I	3 hours
c. EEL	5365	Introduction to Digital Systems	3 hours
		or	
EEL	5441	Coherent Optics Applications	3 hours
		or	
EEL	6530	Communications Systems Design	3 hours

M.S.E. Environmental Engineering Option

15 Semester Hours

The student will take the following Environmental Engineering core and specialty courses offered by the Department of Civil Engineering and Environmental Sciences.

a. ENV	5625	Water Resources Engineering	3 hours
b. ENV	6015	Physical/Chemical Treatment Systems	3 hours
c. ENV	6016	Biological Treatment Systems	3 hours
d. ENV	6518	Industrial Waste Treatment	3 hours
e. ENV	6106	Atmospheric Pollution Control	3 hours
		or	
ENV	6116	Design of Air Pollution Controls	3 hours

M.S.E. Industrial Engineering Option

20 Semester Hours

The core requirements for all students will be met by the following courses.

EIN	6357	Advanced Engineering Economics Analysis	3 hours
STA	5156	Probability and Statistics for Engineers	4 hours
EIN	5170	Microcomputer Practicum	3 hours
EIN	6140	Project Engineering	3 hours
ESI	5531	Discrete System Stimulation	3 hours
ESI	6427	Mathematical Programming I	4 hours

M.S.E. Manufacturing Engineering Option

15 Semester Hours

This option is offered by the Industrial Engineering and Management Systems Department. Students who have not had the following courses or their equivalent must take them as prerequisites:

EIN	4391C	Manufacturing Engineering
EIN	3315C	Work Measurement and Design
EIN	4332	Industrial Control Systems

The core requirements for all students will be met by the following courses:

EIN	6602C	Expert Systems in Manufacturing	3 hours
EIN	6605C	Robotics in Industry	3 hours
EIN	6607C	Computer Numerical Control	3 hours
EIN	6392C	Manufacturing Systems	3 hours
ECM	5505C	Micro. Based Control Systems	3 hours
		or	
ECM	5506C	Engr. Applications of Computer Graphics	

M.S.E. Mechanical Engineering Option

15 Semester Hours

The core requirement for all students will be met by the courses listed:

a. EML	5237	Advanced Mechanics of Materials	3 hours
b. EML	5271	Advanced Dynamics	3 hours
c. EML	6154	Conduction Heat Transfer	3 hours
		or	
EML	6155	Convection Heat Transfer	3 hours
		or	
EML	6157	Radiation Heat Transfer	3 hours

d. EML 6530	Principles of Design	3 hours
e. EML 6710	Gas Dynamics	3 hours
	or	
EML 6712	Mechanics of Viscous Flow	3 hours

MASTER OF SCIENCE — M.S.

The Master of Science graduate program is designed to provide the competent student in engineering or other selected fields an opportunity to specialize in a particular subject area within engineering. Normally this objective may be attained through the satisfactory completion of graduate-level course work and research endeavor. A grade point average of "B" must be maintained in all required articulation courses.

Each department and program in the college offers one or more Master of Science options as shown in the department listings below.

Department of Civil Engineering & Environmental Sciences

Construction
Environmental Sciences
Structures & Foundations
Transportation Systems

Department of Electrical Engineering & Communication Services

Electrical Systems and Sciences

Department of Computer Engineering

Computer Systems
Engineering Systems Analysis

Department of Industrial Engineering & Management Systems

Computer Integrated Manufacturing
Engineering Administration
Operations Research
Simulation Systems

Department of Mechanical Engineering & Aerospace Sciences

Energy Systems
Mechanical Systems

M.S. DEGREE REQUIREMENTS

REQUIRED PROGRAM OPTION COURSES

10-21 Semester Hours

See departmental option requirements in the following section. The M.S. options are arranged alphabetically.

RESTRICTED ELECTIVES

3-17 Semester Hours

Additional advanced mathematics (beyond MAC 3313 and MAP 3302), computer systems, natural sciences, engineering sciences or appropriate supportive areas.

RESEARCH REPORT OR THESIS

3-6 Semester Hours

Students must be registered in the semester in which application for graduation is filed.

EXAMINATION

Oral defense of research report or thesis is required. Satisfactory completion of a comprehensive examination may be required.

ARTICULATION COURSES

Specified on an individual basis depending on previous background.

Total Minimum Semester Hours Required:

30

M.S. OPTION REQUIREMENTS

M.S. Computer Integrated Manufacturing Option

30 Semester Hours

This option (offered by the Department of Industrial Engineering and Management Systems) is designed for students who have an undergraduate degree in Engineering, Mathematics, Computer Science, or allied field. An individual program of study is developed with a faculty advisor but must conform to the following guidelines:

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Operations Research (EGN 4634)
 Probability and Statistics (STA 3032)
 Higher Level Programming Language Ability
 Manufacturing Engineering (EIN 4391)

Required Courses

12 Semester Hours

EIN 6605C	Robotics in Industry	3 hours
EIN 6607C	Computer Numerical Control	3 hours
EIN 6392	Manufacturing Systems	3 hours
EIN 6602C	Expert Systems in Manufacturing	3 hours

Restricted Electives (Select 4)

12-13 Semester Hours

ECM 5806	Software Engineering	3 hours
ECM 5506C	Computer Graphics	3 hours
ECM 5505C	Microcomputer Control	3 hours
EIN 5383	Network Analysis	3 hours
EIN 6140	Project Engineering	3 hours
EIN 6258	Human-Computer Interaction	3 hours
EIN 6337	Production and Inventory Control	3 hours
EIN 6357	Advanced Engineering Economics	3 hours
EIN 6608	Surface Design and Manufacture	3 hours
EIN 6942	Industrial Design Practicum	3 hours
STA 5156	Probability and Statistics for Engineers	4 hours

Research Report or Thesis

3-6 Semester Hours

Additional subdiscipline-specialty courses and appropriate support courses may be selected to meet the individual professional needs for each student.

M.S. Computer Systems Option

30 Semester Hours

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. 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
 Probability and Statistics (STA 3032)
 FORTRAN Programming (COP 3215)
 Digital Logic Circuits (EEL 3342)

Required Courses

12 Semester Hours

EEL 5365	Introduction to Digital Systems	3 hours
EEL 6349	Computer Systems Design	3 hours
ECM 5505	Micro Computer Systems	3 hours
ECM 5806	Software Engineering I	3 hours

Restricted Electives Select 3 courses from the following:

9 Semester Hours

ECM 5506	Engineering Applications of Computer Graphics	3 hours
ECM 6706	Engineering Data Reduction	3 hours
ECM 6805	Microcomputer Applications Design	3 hours
ECM 6807	Software Engineering II	3 hours
EEL 6717	Digital Computer Systems	3 hours
EIN 6258	Man-Computer Interaction	3 hours

Electives

3-6 Semester Hours

Research Report or Thesis

3-6 Semester Hours

M.S. Construction Option

30 Semester Hours

This option (offered by the Department of Civil Engineering and Environmental Sciences) integrates construction management science theory with construction engineering principles and practices. The program is designed to provide the student with the necessary knowledge to form a construction company, manage a complete project at a profit and to plan and supervise construction operations and research. Emphasis is given to macro construction engineering and international projects. Students are motivated to develop new optimization and cost reduction techniques.

Prerequisites

The student in this program should have background or course work in the following areas:

- Mathematics through Differential Equations (MAP 3302)
- Probability and Statistics (STA 3032)
- FORTTRAN Programming (COP 3215)
- Engineering Economics (EGN 3613)
- Mechanics of Materials (EGN 3331)
- Operations Research (EGN 4634)
- Transportation Engineering (TTE 4004)
- Structural Engineering Analysis (CES 4124)
- Structural Steel or Concrete Design (CES 4605 or CES 4704)

Required Courses

16 Semester Hours

ECI 5147	Construction Project Management	3 hours
ECI 5135	Construction Cost Engineering	3 hours
ECI 6148	Construction Networking Techniques	3 hours
ECI 6146	Analytical Design and Construction	3 hours
ESI 6316	Operations Research	4 hours

Restricted Electives(Choose at least two courses)

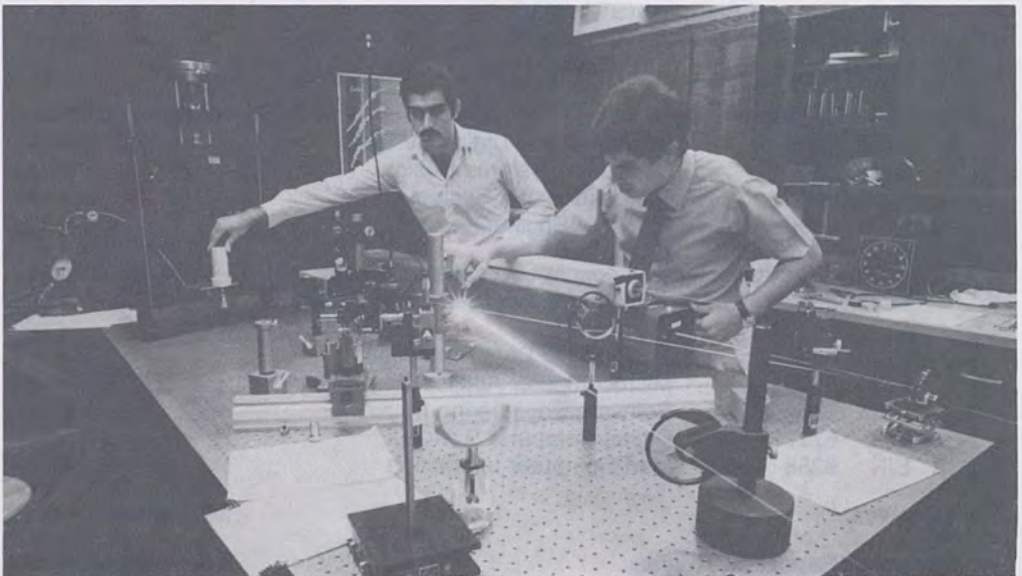
6-10 Semester Hours

STA 5156	Probability and Statistics for Engineers	4 hours
EIN 6357	Engineering Economic Analysis	3 hours
ECI 6917	Public Works Engineering	3 hours

Research Report or Thesis

3-6 Semester Hours

Additional subdiscipline-specialty courses and appropriate support courses are selected to meet the individual professional needs for each student.



M.S. Electrical Systems and Sciences Option

30 Semester Hours

Prerequisites

- Mathematics through Differential Equations (MAP 3302)
- Physics with Calculus (PHY 3048, PHY 3049)
- Electronics (EEL 3307)
- Circuits (EEL 3122)
- Communication (EEL 3552)
- Electromagnetics (EEL 3470)

This option (offered by the Department of Electrical Engineering and Communication Sciences) is available for individuals with undergraduate degrees in areas related to electrical engineering such as physics, mathematics, and computer science. The student, with the approval of the graduate committee, will select courses in electrical engineering or related fields with the objective of specializing in a particular subject area within Electrical Engineering consistent with the student's academic background.

For example, this interdisciplinary option is particularly well suited to students who have a strong physics and applied mathematics background and desire advanced study in the following areas: electro-optics and optical communications, electromagnetics, and microelectronics. Information on typical programs of study in these areas can be obtained from the Department of Electrical Engineering and Communication Sciences.

M.S. Energy Systems Option

30 Semester Hours

This option is offered by the Department of Mechanical Engineering and Aerospace Sciences.

Prerequisites

- Mathematics through Differential Equations (MAP 3302)
- Probability and Statistics (STA 3032)
- FORTTRAN Programming (COP 3215)
- Fluid Mechanics (EML 4142)
- Heat Transfer (EML 4141)
- Thermodynamics (EML 3106)

Courses available in this option include:

EAS 6123	Advanced Aerodynamics	3 hours
EAS 6400	Aeromechanics	3 hours
EML 5105	Statistical Thermodynamics	3 hours
EML 5416	Solar Energy Systems	3 hours
EML 5451	Energy Conversion	3 hours
EML 5453	Energy Analysis	3 hours
EML 5454	Photovoltaics	3 hours
EML 5455	Energy Conservation	3 hours
EML 5609	Environmental Thermodynamics	3 hours
EML 6104	Classical Thermodynamics	3 hours
EML 6124	Two Phase Flow	3 hours
EML 6131	Combustion Phenomena	3 hours
EML 6154	Conduction Heat Transfer	3 hours
EML 6402	Turbomachinery	3 hours
EML 6155	Convection Heat Transfer	3 hours
EML 6157	Radiation Heat Transfer	3 hours
EML 6533	Advanced Analytical Techniques	3 hours
EML 6710	Advanced Gas Dynamics	3 hours
EML 6712	Mechanics of Viscous Flow	3 hours
EML 6715	Computational Fluid Mechanics	3 hours
ENV 5005	Nuclear Reactor Engineering	3 hours

A typical program might consist of 21 hours selected from the above, as well as 3-6 hours of advanced mathematics, scientific subjects, or engineering electives.

Research Report or Thesis

3-6 Semester Hours

M.S. Engineering Administration Option

30 Semester Hours

This program (offered by the Department of IEMS) 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

Engineering Economics (EGN 3613)
Operations Research (EGN 4634)
Mathematics through Differential Equations (MAP 3302)
Probability and Statistics (STA 3032)
FORTRAN Programming (COP 3215)
Accounting for Engineers (APA 3471)

Required Courses

20 Semester Hours

STA 5156	Probability and Statistics for Engineers	4 hours
EIN 5117	Management Information Systems	3 hours
EIN 6357	Advanced Engineering Economic Analysis	3 hours
EIN 6140	Project Engineering	3 hours
ESI 5170	Microcomputer Practicum	3 hours
ESI 6316	Operations Research	4 hours

Restricted Electives (at least 4 courses)

4-7 Semester Hours

ACG 5005	Financial Accounting Concepts	3 hours
ECO 5005	Economic Concepts	3 hours
ECO 6115	Economic Analysis of the Firm	3 hours
ECP 6205	Labor Economics	3 hours
ECP 6405	Industrial Organization & Performance	3 hours
ECP 6705	Managerial Economics	3 hours
EIN 6305	Engineering Administration II	3 hours
EIN 6215	Systems Safety	3 hours
EIN 4251	Automation	3 hours
ESI 4234	Engineering Reliability & Quality Assurance	3 hours
FIN 5405	Financial Concepts	3 hours
FIN 6406	Financial Analysis & Management	3 hours
MAN 5051	Management Concepts	2 hours
MAN 6055	Planning & Control Analysis	3 hours
MAN 6121	Group Decisions & Analysis	3 hours
MAN 6206	Organizational Behavior & Development	3 hours

Research Report or Thesis

3-6 Semester Hours

M.S. Engineering Systems Analysis Option

30 Semester Hours

This program (offered by the Department of Computer Engineering) is designed for students with an undergraduate degree in engineering, mathematics, or science. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

Prerequisites

Operations Research (EGN 4634)
 Mathematics through Differential Equations (MAP 3302)
 Probability and Statistics (STA 3032)
 FORTRAN Programming (COP 3215)
 Systems Analysis (EGN 3703)

Required Courses

		14 Semester Hours
ECM 5135	Engineering Math Analysis I	3 hours
ECM 6235	Engineering Math Analysis II	3 hours
ECM 6416	Discrete Systems Simulation	4 hours
ESI 6316	Operations Research	4 hours

Restricted Technical Electives

6-7 Semester Hours

Choose at least two courses:

ESI 6525	Systems Dynamics	3 hours
ESI 5575	Mathematical Systems Theory	3 hours
EIN 5117	Management Information Systems	3 hours
ECM 6426	Continuous System Simulation	3 hours
ECM 6417	Advanced Systems Simulation	3 hours
STA 5156	Probability and Statistics for Engineers	4 hours

Electives

3-7 Semester Hours

Additional subdiscipline-specialty courses are selected and often include appropriate support courses to meet the individual professional needs for each student.

Research Report or Thesis

3-6 Semester Hours

M.S. Environmental Sciences Option

30 Semester Hours

This option (offered by the Department of Civil Engineering and Environmental Sciences) 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)
 Hydrology and Hydraulics (ENV 4403, ENV 4404)
 Environmental Engineering — Process Design (ENV 4504)
 Chemical Process Control — (EES 4202)
 Biological Process Control — (EES 4204)
 Atmospheric Pollution Control — (ENV 4119)
 Solid and Hazardous Wastes — (ENV 4355)

Required Courses (Selected from the following)

12 Semester Hours

a.	ENV 5625	Water Resources Engineering	3 hours
		or	
	ECI 6235	Open Channel Hydraulics	3 hours
		or	
	ECI 6617	Groundwater Hydrology	3 hours
b.	ENV 6015	Physical/Chemical Treatment Systems	3 hours
		or	
	ENV 6016	Biological Treatment Systems	3 hours
		or	
	ENV 6518	Industrial Waste Treatment	3 hours

c. ENV 6106	Atmosphere Pollution Control or	3 hours
ENV 6116	Design of Air Pollution Controls	3 hours
d. ENV 5615	Environmental Impact Assessment or	3 hours
ENV 6515	Receiving Water Impacts or	3 hours
ENV 6519	Aquatic Chemical Processes	3 hours

Electives

12-15 Semester Hours

The remaining course work is selected from subdiscipline courses.

Research Report or Thesis

3-6 Semester Hours

M.S. Mechanical Systems Option

30 Semester Hours

This program is offered by the Department of Mechanical Engineering and Aerospace Sciences.

Prerequisites

Mathematics Through Differential Equations (MAP 3302)
Probability and Statistics (STA 3032)
FORTRAN Programming (COP 3215)
Kinematics (EML 3262)
Vibration Analysis (EML 4222)
Machine Design (EML 3502)

Courses available in this option include:

21 Semester Hours

EGM 5584	Biomechanics & Biomaterials	3 hours
EGM 6611	Continuum Mechanics	3 hours
EGM 6653	Theory of Elasticity	3 hours
EMA 5126	Physical Metallurgy	3 hours
EMA 5326	Corrosion & Electrochemical Engineering	3 hours
EMA 5626	Mechanical Metallurgy	3 hours
EML 5228	Acoustics	3 hours
EML 5237	Advanced Mechanics of Materials	3 hours
EML 5245	Tribology	3 hours
EML 5271	Advanced Dynamics	3 hours
EML 6065	Variational Mechanics	3 hours
EML 6223	Advanced Vibrational Systems	3 hours
EML 6226	Analytical Dynamics	3 hours
EML 6279	Synthesis of Mechanisms	3 hours
EML 6306	Advanced Engineering Instrumentation	3 hours
EML 6311	System Control	3 hours
EML 6402	Turbomachinery	3 hours
EML 6506	Experimental Mechanics	3 hours
EML 6530	Principles of Design	3 hours
EML 6531	Mechanical Behavior of Materials	3 hours
EML 6532	Computer-Aided Design	3 hours
EML 6533	Advanced Analytical Techniques	3 hours

A typical program might consist of 21 hours selected from the above, as well as 3-6 hours of advanced mathematics, scientific subjects, or engineering electives.

Research Report or Thesis

3-6 Semester Hours

M.S. Operations Research Option

30 Semester Hours

This program (offered by the Department of Industrial Engineering and Management Sciences) is designed for students who have an undergraduate degree in engineering, mathematics, or science. An individual program of study is developed with a faculty advisor but must conform to the following guidelines:

Prerequisites

Engineering Economy (EGN 3613)
 Operations Research (EGN 4634)
 Mathematics through Differential Equations (MAP 3302)
 Probability and Statistics (STA 3032)
 FORTRAN Programming (COP 3215)

Required Courses

18 Semester Hours

ECM 5135	Engineering Math Analysis I	3 hours
ESI 5170	Microcomputer Practicum	4 hours
ESI 5531	Discrete Systems Simulation	3 hours
ESI 6427	Math Programming I	4 hours
STA 5156	Probability & Statistics for Engineers	4 hours

Representative Electives

6-10 Semester Hours

ECM 6235	Engineering Math Analysis II	3 hours
ESI 6336	Queuing Systems	3 hours
ESI 6437	Mathematical Programming II	4 hours
EIN 6337	Production & Inventory Control	3 hours
ESI 6529	Advanced Systems Simulation	3 hours

Research Report or Thesis

3-6 Semester Hours

Additional subdiscipline-specialty courses and appropriate support courses may be selected to meet the individual needs of each student.

M.S. Simulation Systems Option

30 Semester Hours

This option (offered by the Department of Industrial Engineering and Management Systems) supports the mission of the University's Institute for Simulation and Training. Central Florida is continually developing as a center for high technology research, development, and manufacturing for government, military, and industrial organizations. The design and management of appropriate training for these activities requires a comprehensive background in modern technology and computer-based methodologies such as that provided in this degree program.

This program is designed for students who have earned an undergraduate degree in Engineering, Mathematics or Science, although other majors can be accommodated with additional prerequisite courses (see below). A program of study which conforms to the following guidelines is developed for each student with the assistance of a faculty advisor and graduate committee.

Prerequisites

Mathematics through Differential Equations (MAP 3302)
 Probability and Statistics (STA 3032)
 FORTRAN or other high-order language programming ability.
 Digital Logic Circuits (EEL 3342)

Required Courses

21 Semester Hours

EIN 6140	Project Engineering	3 hours
INP 6605	Training and Performance Appraisal	3 hours
EME 6613	Instructional Systems Design	3 hours
ESI 5531	Discrete Systems Simulation	3 hours
ECM 6426	Continuous Systems Simulation	3 hours
ESI 5170	Microcomputer Practicum	3 hours
ESI 6525	Systems Dynamics	3 hours

Electives

6-9 Semester Hours

These courses are selected with the approval of the student's committee to reflect special interests; representative packages (a through e) include the following examples:

a.	ECM 5806	Software Engineering I	3 hours
	ECM 6807	Software Engineering II	3 hours
b.	EIN 4243	Human Engineering I	3 hours
	EIN 6248	Human Engineering II	3 hours
	EIN 6258	Man-Computer Interaction	3 hours
c.	ECM 5506	Engineering Applications of Computer Graphics	3 hours
	ECM 6441	Computer Image Processing	3 hours
d.	EEL 5365	Introduction to Digital Systems	3 hours
	EEL 6349	Computer Systems Design	3 hours
	EEL 6717	Digital Computer Systems	3 hours
e.	ECM 5505C	Microcomputer-Based Monitoring and Control Systems	3 hours
	ECM 6805C	Microcomputer Applications Design	3 hours

The program requires a minimum of 30 semester hours of graduate credit, including either a 3-hour Research Report or 6-hour Thesis prepared under the supervision of the student's graduate committee.

M.S. Structures & Foundations Option

30 Semester Hours

This option (offered by the Department of Civil Engineering and Environmental Sciences) is offered to students with appropriate baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

Matrix Methods (CES 4144)
 Steel Design (CES 4605)
 Concrete Design (CES 4704)
 Mathematics through Differential Equations (MAP 3302)
 Geotechnical Engineering (ECI 4305)

Required Courses (Select from the following)

15 Semester Hours

CES 6209	Dynamics of Structures	3 hours
CES 6606	Steel Design	3 hours
CES 6707	Concrete Design	3 hours
CES 5107	Matrix Methods	3 hours
ECI 6346	Soil Dynamics	3 hours
ECI 6324	Foundation Analysis	3 hours
ECI 5306	Geotechnical Engineering II	3 hours

Electives

9-12 Semester Hours

Research Report or Thesis

3-6 Semester Hours

M.S. Transportation Systems Option

30 Semester Hours

This option (offered by the Department of Civil Engineering and Environmental Sciences) is open to students with appropriate baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

Probability and Statistics (STA 3032)
 Operations Research (EGN 4634)
 Transportation Engineering (TTE 4004)
 Urban Systems Engineering (ENV 4651)
 Mathematics through Differential Equations (MAP 3302)

Required Courses

15 Semester Hours

TTE 5204	Traffic Engineering	3 hours
TTE 5720	Design Elements of Transportation Systems	3 hours
ECI 6197	Public Works Engineering	3 hours
TTE 6620	Mass Transportation Systems	3 hours
TTE 6526	Planning and Design of Airports	3 hours

MASTER OF SCIENCE IN ENVIRONMENTAL SYSTEMS MANAGEMENT — M.S.E.S.M.

The College of Engineering offers graduate work leading to the Master of Science in Environmental Systems Management. The program is designed to provide for advanced professional and specialized education in selected areas of engineering and science related to the management and control of our natural and man-made environment.

The program provides for the preparation of engineering specialists for service in environment-related occupations by allowing concentrated study in a limited number of subdisciplines. The program is open to those with previous experience or course work which is closely related to the environmental sciences and environmental or systems engineering.

M.S.E.S.M. DEGREE REQUIREMENTS

Degree requirements vary depending upon student interests and background. Interested students should consult the chairman of the Civil Engineering and Environmental Sciences Department.

REQUIRED CORE COURSES

22 Semester Hours

a. ECM 5506	Engineering Applications of Computer Graphics	3 hours
b. EIN 6357	Engineering Economic Analysis	3 hours
c. ESI 6427	Mathematical Programming I	4 hours
d. ENV 5625	Water Resources Engineering	3 hours
e. ENV 6106	Atmospheric Pollution Control	3 hours
f. ENV 6015	Physical/Chemical Treatment Systems	3 hours
	or	
ENV 6016	Biological Treatment Systems	3 hours
g. ENV 5615	Environmental Impact Assessment	3 hours

RESEARCH REPORT

3 Semester Hours

OPTION AREAS

5 Semester Hours

Hours from appropriate areas such as Environmental Engineering, Civil Engineering, Mechanical Engineering, Electrical Engineering, Industrial Engineering, and Engineering Mathematics and Computer Systems. See option areas listed below:

Group I - Public Systems

TTE 6620	Mass Transportation Systems	3 hours
ECI 6198	Regional Planning, Design, and Development	3 hours
ECI 6197	Public Works Engineering	3 hours

Group II - Instrumentation

EEL 6621	Nonlinear Control Systems	3 hours
EEL 5630	Digital Control Systems I	3 hours
ECI 6197	Public Works Engineering	3 hours

Group III - Atmospheric

EML 5228	Acoustics	3 hours
EML 5451	Energy Conversions	3 hours
MET 5710	Meteorology for Engineers	3 hours

Group IV - Water Resources

ECI 6235	Open Channel Hydraulics	3 hours
ECI 6617	Groundwater Hydrology	3 hours
EES 5210	Potable Water Treatment	3 hours

Total Minimum Semester Hours Required:

30

MASTER OF CIVIL ENGINEERING — M.C.E.

This is a professional practice oriented education program with an enhanced design element, nonengineering professional practice courses, and a six-month internship prior to graduation. The curriculum provides support for professional practice and, as such, the graduating student is required to take the Engineering Intern Examination. The program builds directly upon an ABET accredited baccalaureate degree in Civil Engineering. Course work more than five years old cannot be used to satisfy degree requirements unless waived by the Dean of Engineering.

M.C.E. DEGREE REQUIREMENTS

REQUIRED COURSES

12 Semester Hours

Design courses at the graduate level are required, selected from departmental offerings (Prefix CES, ECI, ENV or TTE).

ELECTIVES

6 Semester Hours

Engineering science, science, and mathematics courses will be selected with advisor's approval.

PROFESSIONAL EMPHASIS

8 Semester Hours

A coordinated, planned sequence of courses covering nontechnical subject matter pertinent to professional practice in the following subjects.

- a. Engineering professional and ethics
- b. Economics
- c. Finance or Business Management
- d. Law, contracts and specifications
- e. Natural resources

INTERNSHIP

1 Semester Hour

Six months full-time supervised internship

RESEARCH REPORT OR THESIS

3 or 6 Semester Hours

A thesis or research report is required.

EXAMINATION

Students must take the Engineer Intern Examination

Total Minimum Semester Hours Required:

30

DOCTORAL PROGRAM

DOCTOR OF PHILOSOPHY DEGREE — PH.D.

The Ph.D. program is primarily intended for those with a master's degree in engineering; but, with appropriate articulation courses, master's degree holders in related disciplines will be able to use the program to study selected engineering disciplines in depth. The graduates of the program are able to meet the highest standards of preparation for leadership in the profession of engineering including research, teaching, and leadership in high technology industry and governmental agencies.

ADMISSION

In addition to satisfying regular University admissions criteria, students must have a master's degree in engineering or a related discipline awarded by a recognized institution. The student must successfully complete a Ph.D. Qualifying Examination conducted by the option department. A student is given two opportunities to pass the qualifying examination, but the second attempt must be approved by the department.

DEGREE REQUIREMENTS

The student's program will consist of a minimum of 84 semester hours of graduate credit.

CORE REQUIREMENT

24 Semester Hours

All three areas listed below must be represented with a minimum of eight hours taken from outside the College of Engineering. The actual courses taken are worked out by the student and his advisory committee and specified in the student's program of study.

Physical Sciences and Mathematics

Engineering Sciences

Management Sciences

OPTION REQUIREMENT

36 Semester Hours

Option courses, normally taken within one discipline, are selected by the student and his advisory committee. The options are:

Civil Engineering

Computer Engineering

Electrical Engineering

Environmental Engineering

Industrial Engineering

Mechanical Engineering

DISSERTATION

24 Semester Hours

Students must have Candidacy before registering for Dissertation hours.

EXAMINATIONS

The candidacy examination will be taken when the student has finished most of his course work and has identified an area of research for the doctoral dissertation. The examination consists of two parts: (1) a written examination and (2) presentation of a written doctoral research prospectus to the committee and an oral review of the proposal. Upon completion of the dissertation, a successful oral defense of the dissertation must be conducted.

Total Semester Hours for the Ph.D. Degree:

84

COLLEGE OF ENGINEERING COURSES

CES 5107 Matrix Structural Analysis

3 cr (3,0)

PR: CES 4144 or equivalent. Optimization and matrix methods applied to the design of real structures.

CES 6116 Finite Elements in Structures

3 cr (3,0)

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: CES 5102 or C.I. 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 5107 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 218 Structural Stability

3 cr (3,0)

PR: CES 5102 or C.I. 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 6707 Concrete Design** 3 cr (3,0)
PR: CES 4704 or equivalent. Design of concrete structures to include economics, slabs, prestressed concrete, and real building examples.
- EAS 6123 Advanced Aerodynamics** 3 cr (3,0)
PR: EAS 4101 or equivalent. Theoretical methods useful for predicting performance and stability of lifting surfaces and vehicles at subsonic, supersonic and hypersonic speeds.
- EAS 6400 Aeromechanics** 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.
- ECI 5135 Construction Cost Engineering** 3 cr (3,0)
PR: C.I. Construction cost planning, equipment productivity and methods. Heavy construction, building construction techniques, estimating production, operation analysis, material take off.
- ECI 5147 Construction Project Management** 3 cr (3,0)
PR: C.I. Strategic planning, management, development, design, and production of complex construction projects. Total building process, value engineering, project funding and cash flow.
- ECI 5215C Hydraulic Engineering** 3 cr (2,3)
PR: EGN 3353. Environmental and civil engineering hydraulics application. Pipe and open channel flow, fittings, flow measurements, etc.
- ECI 5306 Geotechnical Engineering II** 3 cr (3,0)
PR: ECI 4305. Continuation of ECI 4305 with emphasis on shear strength and design factors for earth pressures bearing capacity, and slope stability.
- ECI 5315 Pavement Design** cr (3,0)
PR: ECI 4305. Pavement types, wheel loads, stresses in pavement components, design factors such as traffic configurations, environmental, economic, drainage, and materials.
- ECI 5433 Geotechnical Engineering Design** 2 cr (1,2)
PR: ECI 4305 and ECI 5306. Project course on design of foundations and other soil structures using geotechnical design methodologies.
- ECI 6045 Mathematical Modeling in Civil Engineering** 3 cr (3,0)
PR: C.I. Development of modeling techniques applied to the analysis of contemporary Civil Engineering problems including transportation, fluid flow, and two-dimensional continuum analysis.
- ECI 6146 Analytical Design and Construction** 3 cr (3,0)
PR: C.I. Research, analytical design and development of buildings and civil engineering projects. Computer-aided graphics and design applications in construction.
- ECI 6148 Construction Networking Techniques** 3 cr (3,0)
PR: C.I. Critical path planning leveling, time-cost trade-offs using precedence networks, network cost analysis, computerized CPM and PERT systems. Competitive bid analysis.
- ECI 6197 Public Works Engineering** 3 cr (3,0)
PR: C.I. Principles and practices, operation and maintenance, equipment, utilities, planning and design, etc.
- ECI 6198 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.
- ECI 6235 Open Channel Hydraulics** 3 cr (3,0)
PR: ENV 4404 or C.I. Free surface flow studies by empirical and theoretical methods for the design, operation, and management of open channels.

- ECI 6324 Foundation Engineering** 3 cr (3,0)
PR: ECI 5306. Analysis and design of spread footings, mat foundations, retaining walls, sheeting and bracing systems and pile foundations.
- ECI 6346 Soil Dynamics** 3 cr (3,0)
PR: ECI 4305. Comprehensive coverage in calculating the dynamic response of foundations, presenting a variety of contemporary techniques for fields and laboratory.
- ECI 6617 Groundwater Hydrology** 3 cr (3,0)
PR: ENV 4404 or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.
- 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 5505C Microcomputer-based Monitoring and Control Systems** 3 cr (2,3)
PR: EEL 3342 or equivalent, COP 3215 or equivalent. Machine language programming; software development aids; interfacing considerations.
- ECM 5506C Engineering Applications of Computer Graphics** 3 cr (2,3)
PR: COP 3215. Introduction to the use of computer graphics, with engineering applications. Laboratory program assignments.
- ECM 5806 Software Engineering I** 3 cr (3,0)
PR: COP 3215, ECM 4504 or equivalent. Design reliability, testing, and implementation of engineering software.
- 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 6426 Continuous System Simulation** 3 cr (3,0)
PR: EGN 4703 or equivalent. Use of state-space techniques, numerical integration, and CSSL programs. Laboratory assignments.
- ECM 6436 Automata Theory** 3 cr (3,0)
PR: EEL 4342 or equivalent. Structural theory and performance characteristics of the finite-state machines.
- ECM 6441 Computer Image Processing** 3 cr (3,0)
PR: ECM 5506, ECM 4504, ECM 4411 or equiv. Advanced topics in digital image processing and computer generated imagery systems. Algorithms for image enhancement and display. Advanced hardware systems.
- ECM 6706 Engineering Data Reduction** 3 cr (3,0)
Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.
- 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.
- 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 5260 Electric Power Generation and Distribution** 3 cr (3,0)
PR: EGN 3375 or equivalent. Concept of complex power in single and three phase systems. Synchronous machines, power transformer, and transmission lines system design.

- 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 5365 Introduction to Digital Systems** 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.
- EEL 5441 Coherent Optics Applications** 3 cr (3,0)
PR: PHY 3101 and EEL 3470 or C.I. Coherent optical radiation and propagation. Design and analysis of optical components and systems.
- EEL 5443 Electro-optics** 3 cr (3,0)
PR: EEL 3470 or consent of Instructor. Principles of optical modulation and detection devices; detection and modulation techniques and systems.
- 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 5461C 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 5499C 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 5517 Surface Acoustic Wave Devices and Systems** 3 cr (3,0)
PR: EEL 3552. 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** 3 cr (3,0)
PR: EEL 3552 and STA 3032. Elements of probability theory; random variables, and stochastic processes.
- EEL 5555 RF Communications** 3 cr (2,1)
PR: EEL 3552. 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 3552, 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 I** 3 cr (3,0)
PR: EEL 3342C and EEL 5173. Real time digital control system analysis and synthesis. Digital compensation of control systems such as high accuracy positional control systems with encoder feedback sensors.
- EEL 6144 Synthesis of Electric Filters** 3 cr (3,0)
Analysis and design of electric filters.
- EEL 6349 Computer System Design** 3 cr (3,0)
PR: EEL 5365 or C.I. Study of digital systems and computer architecture using digital design language. Specification and design of computer systems. Comparison of software and hardware solutions.
- EEL 6371 Amplifier Design** 3 cr (3,0)
Small signal device models; analysis and synthesis of electronic amplifier circuits in frequency and time domains.
- EEL 6372 Operational Amplifiers** 3 cr (3,0)
The design of the differential amplifier stage, multi-staging, linear circuit applications, uses in non-linear circuits, active filters.
- 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 6502 Digital Signal Processing I** 3 cr (3,0)
PR: EEL 5173 or C.I. Treatment of digital signal and system characteristics in time and frequency domain with emphasis on conversion, Z-transform, FFT theory. Real-time processing; correlation functions; system identification.
- EEL 6504 Communications Systems Design** 3 cr (3,0)
PR: EEL 6530. Information and coding theory. Modem design. Binary and M-ary modulations. Intersymbol interference and pulse shaping. DS and FS spread-spectrum systems.
- EEL 6505 Digital Signal Processing II** 3 cr (3,0)
PR: EEL 6502. Programmable real-time signal processors (digital filters), multi-dimensional signal processing, image processing, computer generated imagery, and other related current topics — all with hardware implementation considerations.
- EEL 6530 Communication Theory** 3 cr (3,0)
PR: EEL 5542 or C.I. Communication in the presence of noise; analog and pulse modulation; use of phase-locked loops, synthesizers, VCOs, system implementations.
- 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 6595 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.
- EEL 6621 Nonlinear Control Systems** 3 cr (3,0)
PR: EEL 5173. Phase plane descriptions of non-linear phenomena, limit cycles, jump conditions, stability, describing functions, Liapunov and Popov theory, time and frequency domain analysis for non-linear systems.
- EEL 6633 Digital Control Systems II** 3 cr (3,0)
PR: EEL 5630. A study of digital control systems with emphasis on advanced large-scale optimal and/or adaptive applications such as "on board" real-time Kalman Filter guidance systems.
- EEL 6671 Modern and Optimal Control Systems** 3 cr (3,0)
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 6717 Digital Computer Systems** 3 cr (3,0)
PR: EEL 6349 or C.I. Analysis of special purpose computer elements, computers, and computer systems. Microprocessor based systems, systems with one or more central or I/O processors, networks of computers.
- EES 5210 Potable Water Treatment** 3 cr (2,3)
PR: EES 4202 and 4204. Engineering application of potable water chemistry involving coagulation, softening, filtration, corrosion, disinfection quality and drinking water.
- EGM 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.

- EGM 6611 Continuum Mechanics** 3 cr (3,0)
PR: EML 5237, EML 4709 or equivalent. Tensors; deformation and strain; stress; field equations, constitutive equations, applications in fluid dynamics and linear elasticity.
- EGM 6653C 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.
- 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** 2 cr (2,0)
PR: C.I. Case studies of selected topics in the engineering and technological development of western civilization. The weight-driven clock, steam engine, electric power, radar, electronics, 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 5264 Industrial Hygiene and Occupational Health** 3 cr (3,0)
Identification and analysis of health hazards in the industrial environment. Occupational hazard control via engineering design and safety programs.
- EIN 5383 Network Analysis** 3 cr (3,0)
PR: EGN 4634. Development, application and computerized analysis of networks for systems and control. Applications of CPM, PERT, GERT, and maximal flow concepts.
- 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** 3 cr (3,0)
PR: EIN 4214 or C.I. Concepts of system safety as applied to the recognition, evaluation and prevention or control of hazards in industry. Fault free analysis and risk management.
- EIN 6241C Human Engineering Design of Communications** 3 cr (2,2)
PR: EIN 6248 (or permission of instructor). Human factors considerations in design of visual and auditory communicative material. Design and research project.
- EIN 6247C Human Engineering Design** 3 cr (2,2)
PR: Permission of Instructor. Fundamentals of human factors job design. Functional flow diagrams. Operational sequence diagrams. Design and research project.
- EIN 6248 Human Engineering II** 3 cr (3,0)
A continuation of EIN 4243 with emphasis on special projects and physiological factors appropriate to the industrial setting.
- EIN 6249C Ergonomics** 3 cr (2,2)
PR: EIN 6248 or C.I. Fundamentals of human factors applications to work place and consumer use. Research project and formal report.
- EIN 6258 Human-Computer Interaction** 3 cr (3,0)
PR: EIN 4243 or C.I. The elements of human-computer interactive systems; hardware and software considerations; requirements of CAI, CAD, and MIS applications; design difficulties found associated with existing systems.
- EIN 6270 Biomechanics and Work Physiology** 3 cr (3,0)
PR: EIN 4243 (or permission of instructor). Basics of biomechanics relating to the physiological cost to perform work tasks.

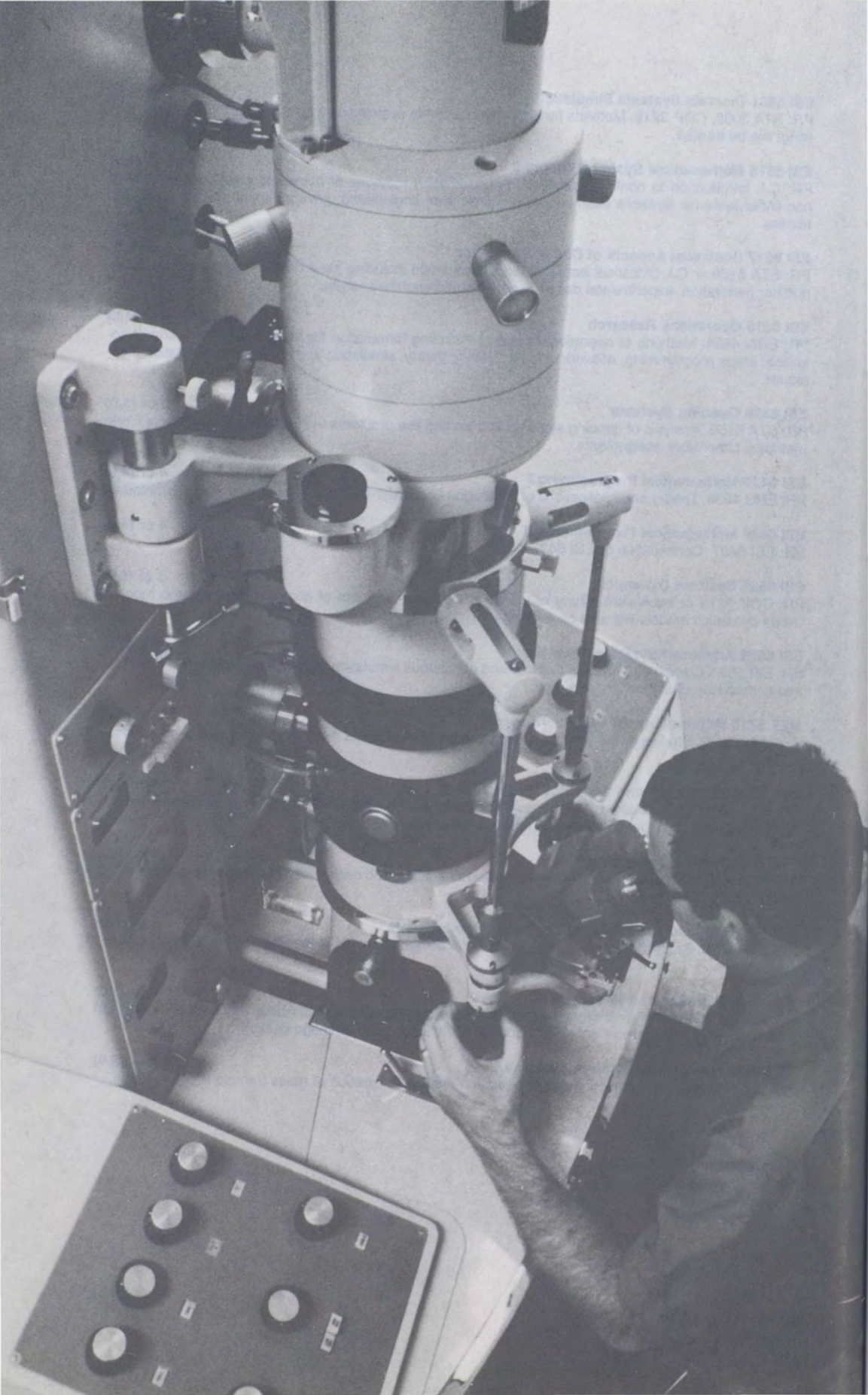
- EIN 6305 Engineering Administration II** **3 cr (3,0)**
PR: EGN 4624. A continuation of EGN 4624 with emphasis on the manufacturing and industrial enterprise.
- EIN 6316 Advanced Work Measurement** **3 cr (3,0)**
PR: EIN 3315 or C.I. A continuation of EIN 3315 consideration of work measurement. Systems and the appropriateness of their use. History and evaluation. Case studies.
- EIN 6337 Production & Inventory Control** **3 cr (3,0)**
PR: EIN 4332 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 6351 Mathematical Programming Models for Engineering Economic Analysis** **3 cr (3,0)**
PR: EIN 6357; ESI 6316. Extension of EIN 6357 to explore the development and application of mathematical programming in the related area of capital and resource allocation.
- 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 6361 Energy Management in Industrial Operations** **3 cr (3,0)**
Review of federal, state and local energy code requirements, performing an energy audit, analysis of process energy requirements and application of conservation techniques, LCC Models.
- EIN 6392C Manufacturing Systems** **3 cr (2,2)**
The integration of new technologies and information processing concepts into a system for controlling the manufacturing enterprise.
- EIN 6416 Public Works Economics** **3 cr (3,0)**
PR: EGN 3613 or equivalent. Economic considerations in public works planning. The nature and objective functions of public works projects; cost estimating, cost allocation and pricing. Cost/benefit analysis on primary and secondary benefits from public works projects.
- EIN 6602C Expert Systems in Manufacturing** **3 cr (2,2)**
Overview of expert systems, basic concepts, architecture and constructing expert systems for the manufacturing environment. Case studies and problems.
- EIN 6605C Robotics in Industry** **3 cr (3,2)**
Robotic systems and their use in industrial operations, 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 6942 Industrial Design Practicum** **2 cr (2,0)**
Analysis of real world operational problems using IEMS techniques via selected field studies.
- 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 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 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.
- EML 5105 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 5228 Acoustics** 3 cr (3,0)
PR: MAP 3302, EML 4222, 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 5237 Advanced Mechanics of Materials** 3 cr (3,0)
PR: EGN 3331. Elements of plane elasticity; failure theories; curved beams, columns; bending and torsion of thin-walled structures; theory of thin plates; applications to design.
- EML 5245 Tribology** 3 cr (3,0)
Principles of fluid film lubrication; bearing design and application; friction and wear of materials.
- EML 5271 Advanced Dynamics** 3 cr (3,0)
PR: EGN 3321, 3331. Dynamics of particles, distributed mass systems, and rigid bodies from an advanced viewpoint. Virtual work. Lagrange's and Euler's equations. Hamilton's principle.
- EML 5416 Solar Energy Systems** 3 cr (3,0)
PR: EML 4142. Principles of solar energy thermal processes. Analysis and design of solar collectors and solar heating and cooling systems.
- EML 5451 Energy Conversion** 3 cr (3,0)
PR: EML 3106 and PHY 3421. Unconventional methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics and magnetohydrodynamics.
- EML 5453 Energy Analysis** 3 cr (3,0)
PR: Consent of instructor. Examination of energy demands and potential supply, computer simulation of resource depletion, alternate energy resources, transportation systems, economic and environmental constraints.
- EML 5454 Photovoltaics** 3 cr (3,0)
PR: EGN 3383, MAP 3302, or C.I. Basic operational principles, design, and current developments in solar cells.
- EML 5455 Energy Conservation** 3 cr (3,0)
PR: EML 4142. Analysis of energy use in economic sectors and design of conservation methodologies to reduce energy use. Heating and cooling loads, passive building designs will be presented.
- EML 5609 Environmental Thermodynamics** 3 cr (3,0)
PR: EML 3106 and EML 4142. Thermodynamics of the environment emphasizing analysis and design of thermal systems. Building heating and cooling load calculations and energy conservation technologies analyzed.
- EML 6065 Variational Mechanics** 3 cr (3,0)
PR: EML 5271. Calculus of variations; Euler's equations; Rayleigh-Ritz method; Galerkin method. Weighted residuals; finite element approximation. Applications in solid mechanics.
- EML 6104 Classical Thermodynamics** 3 cr (3,0)
PR: EML 3106 or C.I. A general postulative approach to classical macroscopic thermodynamics featuring states as fundamental constructs. Conditions of equilibrium, stability criteria, thermodynamic potentials. Maxwell relations and phase transitions.
- EML 6124 Two Phase Flow** 3 cr (3,0)
PR: EGN 3353. General transport equations for multiphase systems including gas-liquid, gas-solid and liquid-solid systems. Computational models for analyzing two-phase flow systems.
- EML 6131 Combustion Phenomena** 3 cr (3,0)
PR: EML 4142, EML 3106. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation, aerodynamics and stability of premixed and diffusion flames.
- EML 6154 Conduction Heat Transfer** 3 cr (3,0)
PR: EML 4142. Classical and numerical techniques applied to the solution of steady and transient conduction problems. Applications to the design of thermal systems.
- EML 6155 Convection Heat Transfer** 3 cr (3,0)
PR: EML 4142, EML 4709 Convection heat, mass and momentum transfer in laminar and turbulent flows. Applications to the design of thermal systems.

- EML 6157 Radiation Heat Transfer** 3 cr (3,0)
PR: EML 4142. Radiation properties and analysis of radiation heat transfer problems. Applications to the design of thermal systems.
- EML 6223 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. Variational principles and Lagrange equations; systems with constraints; canonical transformations; Hamilton-Jacobi theory.
- 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 6306 Advanced Engineering Instrumentation** 3 cr (3,0)
PR: EML 3303 or equivalent. Theoretical and experimental study of principles of operation, analysis and design of mechanical and electromechanical systems.
- EML 6311 System Control** 3 cr (3,0)
PR: EGN 714 or equivalent. 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 6402 Turbomachinery** 3 cr (3,0)
PR: EAS 4300 or EML 4411 or equivalent. Application of the principles of fluid mechanics, thermodynamics and aerodynamics to the design and analysis of pumps, compressors, and turbines.
- EML 6506C Experimental Mechanics** 3 cr (2,2)
PR: EML 3303, PHY 3421C. Selected topics in strain measurements, photoelasticity, holographic interferometry; laser speckle measurement; acoustic emission, measurement of correlation and coherence functions.
- EML 6530 Principles of Design** 3 cr (3,0)
PR: EML 5237, EML 5271 or C.I. Morphology of design, introductory decision theory, reliability analysis and safety factors, strength optimization, probabilistic aspects and advanced topics in machine design.
- EML 6531 Mechanical Behavior of Materials** 3 cr (3,0)
PR: EML 5237 or C.I. Emphasis on design applications. Macroscopic concepts of fracture mechanics, fatigue. Introduction to plasticity, limit analysis. Composite materials.
- EML 6532 Computer-Aided Design** 3 cr (3,0)
PR: EML 5237 or C.I. Theory, application and implementation of digital computer oriented algorithms for the synthesis, simulation, analysis and design of mechanical systems.
- EML 6533 Advanced Analytical Techniques in Mechanical Engineering** 3 cr (3,0)
PR: ECM 6235 or equivalent. Heat transfer, fluid mechanics and mechanical systems problems. Solutions by complex analysis, transforms, integral equations, and singular perturbation.
- EML 6710 Advanced Gas Dynamics** 3 cr (3,0)
PR: EML 4709 or C.I. Analysis of steady and unsteady subsonic, supersonic and hypersonic flows. Aerodynamic applications to the design of nozzles, diffusers, and high speed wind tunnels.
- EML 6712 Mechanics of Viscous Flow** 3 cr (3,0)
PR: EGN 3353, ECM 4114 or C.I. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.
- EML 6715C Computational Fluid Mechanics** 3 cr (2,3)
PR: EML 4709 or C.I. plus knowledge of FORTRAN. Computer studies of dynamics of a body moving through a fluid medium; inviscid and viscous flows; introduction to secondary flows and flow instabilities.
- ENU 5005 Nuclear Reactor Engineering** 3 cr (3,0)
PR: EML 4142 and PHY 3101. Application of thermodynamics, fluid mechanics, heat transfer and materials to nuclear reactor design. Emphasis placed on reactors for electric power production.

- ENV 5045L Research Methods in Environmental Engineering** 1 cr (0,2)
PR: STA 3032, ENV 4504 or C.I. Experimental design and modeling of environmental engineering systems using fundamental concepts of computer programming, probability and statistics.
- ENV 5615 Environmental Impact Assessment** 3 cr (3,0)
PR: C.I. Evaluation, estimating, and predicting the effects of structures, processes, and systems upon the environmental and the effects of environmental changes upon human populations.
- ENV 5625 Water Resources Engineering** 3 cr (3,0)
PR: ENV 4403, ENV 4404. Systems identification and solution to complex water allocation problems, and other hydraulic engineering designs and operations using economic analysis and operations research techniques.
- ENV 6015 Physical/Chemical Treatment Systems in Environmental Engineering** 3 cr (3,0)
PR: ENV 4504 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 4204 and ENV 4504 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, EGN 4504. Environmental systems using feedback and feedforward real-time Laplace or frequency domain dynamics.
- ENV 6106 Atmospheric Dispersion Modeling** 3 cr (3,0)
PR: ENV 4119 or C.I. Atmospheric composition, dynamics, sources, nature of contaminants, engineering methods, and mathematical modeling. Current computer models will be used.
- ENV 6116 Design of Air Pollution Controls** 3 cr (3,0)
PR: ENV 4119. Current methods for design and performance analysis to include scrubbers, baghouses, precipitators, and VOC incinerators.
- ENV 6356 Solid Wastes Management** 3 cr (3,0)
Study of the extent and characteristics of the solid waste problem, collection and disposal systems, environmental modeling and selected designs.
- ENV 6436 Water and Wastewater Systems Design** 2 cr (2,0)
PR: ENV 4504 and 4119 or C.I. Project course on design of water and wastewater systems.
- ENV 6505 Sludge Management Operations in Environmental Engineering** 3 cr (3,0)
PR: ENV 4504. Theory and design of sludge management operations and processes in environmental engineering, including stabilization dewatering and ultimate disposal.
- ENV 6515 Receiving Water Impacts** 3 cr (3,0)
PR: EES 4202 and 4204 or C.I. Study of fate and transport of pollutant loadings into receiving waters, based upon physical, chemical and biological interactions in natural systems.
- ENV 6518 Industrial Waste Treatment** 3 cr (3,0)
PR: ENV 4504 and ENV 4119 or C.I. Theories and methods of management, reduction, treatment, and case studies of major industrial waste problems will be studied.
- ENV 6519 Aquatic Chemical Processes** 3 cr (3,0)
PR: EES 4202 and EES 4404 or C.I. The applicability of water chemistry and physical chemistry on natural waters and waste-water with emphasis on environmental engineering problems.
- ESI 5170 Microcomputer Practicum** 3 cr (2,3)
PR: Graduate Standing or C.I. Survey of personal computer programming and use in decision support applications in engineering.

- ESI 5531 Discrete Systems Simulation** **3 cr (3,0)**
 PR: STA 3032, COP 3215. Methods for performing discrete systems simulation, including network modeling, will be treated.
- ESI 5575 Mathematical Systems Theory II** **3 cr (3,0)**
 PR: C.I. Introduction to nonlinear analysis. Approximation methods of numerical solutions. Stability of non-linear systems. Systems examples to be taken from engineering, environmental science, and economics.
- 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 6316 Operations Research** **4 cr (4,0)**
 PR: EGN 4634. Methods of operations research including formulation for models and derivation of solutions; linear programming, network models queuing theory, simulation and nonlinear optimization techniques.
- 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 6427 Mathematical Programming I** **4 cr (4,0)**
 PR: ENG 4634. Theory and applications of linear, non-linear, dynamic and goal programming techniques.
- ESI 6437 Mathematical Programming II** **4 cr (4,0)**
 PR: ESI 6427. Continuation of ESI 6427.
- ESI 6525 Systems Dynamics** **3 cr (3,0)**
 PR: COP 3215 or equivalent. Study of industrial dynamics and use of computerized dynamo models. Urban dynamics models will also be addressed.
- ESI 6529 Advanced Systems Simulation** **3 cr (3,0)**
 PR: ESI 5531. Combined networks discrete and continuous simulation, applications, statistics of analysis and comparison of simulation language.
- 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** **4 cr (4,0)**
 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: STA 3032. Study of operator and vehicle characteristics, and design for street capacity, signals, signs and markings.
- TTE 5720 Geometric Designs of Transportation Systems** **3 cr (3,0)**
 PR: TTE 4004. Study of geometric and construction design elements in the engineering of transportation systems.
- TTE 6526 Planning and Design of Airports** **3 cr (3,0)**
 PR: C.I. Background of aviation and airport development, aircraft characteristics. Planning and design of airport components. Heliport and STOL ports and pavement and drainage design.
- TTE 6620 Mass Transportation Systems** **3 cr (3,0)**
 PR: C.I. Planning, design, construction, operation and administration of mass transportation systems.



COLLEGE OF HEALTH

To meet the needs of students and the community, the College of Health was established in 1978. Two graduate programs are presently offered: the Master of Arts in Communicative Disorders and the Master of Science in Health Sciences. The College believes that through advanced education and an intensive study in a health related area, a graduate will be a valuable asset to health and health care in the nation as well as Florida.

COLLEGE ADMINISTRATION

R. M. Gerugthy..... Dean

Faculty

Communicative Disorders

D. L. Hedrick, Ph.D..... Professor
D. L. Ratusnik, Ph.D..... Chairman and Professor
D. B. Ingram, Ph.D..... Associate Professor
T. A. Mullin, Ph.D..... Associate Professor
H. A. Utt, Ph.D..... Assistant Professor

Health Science

L. J. Acierno, M.D..... Professor
J. F. Bergner, Ph.D..... Professor
R. M. Gerugthy, DDS, Ph.D..... Dean and Professor
M. Sweeney, Ph.D..... Professor
D. J. Crittenden, Ph.D..... Associate Professor
M. J. Edwards, Ed.D..... Associate Professor
M. Kangelos..... Associate Professor
T. S. Mendenhall, Ph.D..... Director and Associate Professor
L. A. Kuyper..... Assistant Professor
J. S. Lytle..... Assistant Professor

COMMUNICATIVE DISORDERS

Dona L. Hedrick.....Graduate Program Coordinator
Office: EN 118, Phone 275-2354

ADMISSION

A baccalaureate degree is required with either a grade point average (GPA) of 3.0 (4.0 = A) for the last 60 semester hours credited towards the earned baccalaureate degree from a regionally accredited institution, or a quantitative-verbal Graduate Record Examination (GRE) score of 1000 or higher. This score must have been obtained within the seven-year period prior to admission to the program. NOTE: The Board of Regents requires that all entering graduate students must have taken the GRE examination even if the student is admissible on the GPA.

In addition to the above University requirements, three letters of recommendation from undergraduate professors and a letter of intent must be submitted to the program. Whenever possible a personal interview will also be recommended.

Applicants whose native language is not English must have a score of 500 or better on the Test of English as a Foreign Language (TOEFL).

PROGRAMS IN COMMUNICATIVE DISORDERS

Professional education is offered in Communicative Disorders leading to the Master of Arts degree in either Speech-Language Pathology or Audiology. The program requires the equivalent of two years full-time attendance to complete and is designed to meet the certification requirements of the American Speech-Language-Hearing Association.

The faculty is keenly aware of the need for combining clinical skills with theoretical foundations. Supervised student practica are offered in the Communicative Disorders Clinic on campus as well as in external settings. Selected outstanding professionals in Central Florida (physicians, speech/language pathologists, audiologists) make up the clinical faculty which supplements the clinical expertise of the regular faculty.

All students will enroll in SPA 6505 or 6506, Clinical Practicums, 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/nonthesis 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

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

20 Semester Hours

All Communicative Disorders students are required to take the following:

SPA 5307	Differential Diagnosis in Audiology	3 hours
SPA 5458	Therapeutic Communication	3 hours
SPA 5553	Differential Diagnosis in Speech and Language	3 hours
SPA 5553L	Differential Diagnosis in Speech and Language Laboratory	1 hour
SPA 5600	Administration and Management of Communicative Disorders Programs	3 hours
SPA 5805	Research in Communicative Disorders	3 hours
SPA 6410	Language Problems in Adults	4 hours

Speech-Language Pathology Specialization

19 Semester Hours

Students in this specialization are required to take these additional courses:

SPA 5225	Fluency Disorders	3 hours
SPA 5225L	Fluency Disorders Laboratory	1 hour
SPA 6131	Measurements in Speech Science	3 hours
SPA 6204	Advanced Studies in Communicative Disorders: Articulation	3 hours
SPA 6204L	Articulation Laboratory	1 hour
SPA 6211	Voice Disorders	3 hours
SPA 6211L	Voice Disorders Laboratory	1 hour
SPA 6403	Advanced Studies in Communicative Disorders: Language	4 hours

Audiology Specialization

20 Semester Hours

Students in the Audiology Specialization are required to take these additional courses:

SPA 5132	Physiological Acoustics	4 hours
SPA 5358	Aural Habilitation/Rehabilitation	4 hours
SPA 6308	Auditory Evaluation and Assessment Procedures for Special Populations	4 hours
SPA 6345	Amplification	4 hours
SPA 6353	Hearing Conservation	4 hours

PRACTICUM credit toward degree.

2 Semester Hours

All students must register for one hour each semester while in attendance, with exceptions as noted.

THESIS/NON-THESIS OPTIONS

Each student will complete a thesis or nonthesis option.

Thesis Option

6 Semester Hours

Students selecting the thesis option will complete a thesis in the area of speech/language pathology or audiology for six semester hours of credit. An advisory committee of three faculty members, chaired by a department faculty member, will be selected to guide the student through the thesis requirements. An oral defense of the thesis is required.

Non-thesis Option

6-7 Semester Hours

Students completing the non-thesis option may select one of the following choices: Clinical Research Project or Clinical Internship. Either non-thesis option will be with faculty approval.

Clinical Research Project

6 hours

A student selecting the Clinical Research Project option must complete 6 semester hours of Directed Research in the area of Speech-Language Pathology or Audiology.

Clinical Internship

7 hours

A student selecting the Clinical Internship option must complete 6 semester hours of internship in Speech-Language Pathology or Audiology. In addition, a student in the Clinical Internship option must register for one hour of Directed Research. Audiology students opting for the Clinical Internship option will require a minimum of 49 semester hours for the degree.

Speech Pathology students opting for the Clinical Internship will require a minimum of 48 semester hours for the degree.

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 Specialization

47

Audiology Specialization

48



HEALTH SCIENCES

Thomas S. Mendenhall.....Director and Program Coordinator
Office: EN 125, Phone 275-2972

ADMISSION

Admission to graduate status in the Master of Science in Health Sciences (MSHS) degree program is based on the following:

- a. 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, or submission of a quantitative-verbal GRE score of 1000 or higher not 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.
- b. Submission of three letters of recommendation from individuals capable of assessing the applicant's ability to undertake graduate work.
- c. Licensure, certification, or registration in a health profession.
- d. 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 student who do not meet all the requirements for regular admission to the MSHS program but who show promise of success may be admitted in a provisional 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, medical laboratory sciences, and health information 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.

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. Following satisfactory completion of course work, and the research report or thesis, each student must pass a comprehensive examination.

REQUIRED CORE		12 Semester Hours
HSC 6555	Principles and Practice of Medicine	3 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

AREA OF EMPHASIS (See requirements for each) 21-24* Semester Hours

RESEARCH REPORT

3 Semester Hours

or

THESIS

6 Semester Hours

* If the thesis option is chosen, only 9 hours are required in Group B.

AREAS OF EMPHASIS

Students must select one of the following three options:

1. Management Option

24 Semester Hours

Students must select a minimum of 12 hours from Group A and 12 hours from Group B.

Group A

12 Semester 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 6420	Case Studies in Health Law	3 hours

Group B - (See College of Business Administration)

12 Semester Hours

ACG 5005	Financial Accounting Concepts	3 hours
ECO 5005	Economic Concepts	3 hours
FIN 5405	Financial Concepts	3 hours
MAN 5051	Management Concepts	2 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.

Group A

12 Semester Hours

HSC 6247	Health Science Education	3 hours
HSC 6306	Health Science Program Development and Operation	3 hours
HSC 6815	Practicum in Health Science Education	3 hours

Elective to be selected with advisor's consent 3 hours

Group B - (See College of Education)

12 Semester 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 6218	Curriculum Writing	3 hours
EVT 5315	Applied Clinical Teaching Techniques in Vocational Education	3 hours

EVT 5316	Clinical Coordination for the Health Occupations Teacher	3 hours
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EVT 5685	Competency Based Vocational Education	3 hours
EVT 6264	Administration Vocational Education	3 hours
EVT 6265	Supervision in Vocational Education	3 hours

Total Minimum Semester Hours Required 39

3. Advanced Clinical Skills Option

Students must select a minimum of 12 hours from Group A and 12 hours from Group B in any of the following three specializations in this Option:

a. Specialization in Cardiopulmonary Science

24 Semester Hours

This specialization is offered by Cardiopulmonary Sciences 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		12 Semester Hours
RET 5937	Special Topics: Research Methods in Medicine	3 hours
HSC 6559	Prevention of Cardiovascular Disease	3 hours
RET 5937	Special Topics: Advanced Study in Cardiopulmonary Physiology with Lab	4 hours
RET 5937	Special Topics: Instrumentation and Computer Applications in Medicine	2 hours
Group B		12 Semester Hours
PCB 6746	Organismal Physiology	4 hours
PET 6386C	Environmental 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:		39

b. Specialization in Health Information Systems 24 Semester Hours

The specialization in Health Information Systems in the Master of Science in Health Science degree is designed to prepare medical record administrators and others with a health care delivery system. Students in the program will gain expertise in the analysis of information needs, system design and selection, data collection and interpretation, management of information systems, and the role of health data in decision-making.

Prerequisites for Admission

Basic Statistics
Introduction to Management
Introduction to Computer Science

NON-HEALTH CARE PROFESSIONAL: The student must complete the following course in addition to the minimum 39 hours for the degree:

Group A		12 Semester Hours
HSA 6815	Practicum in Health Care Management	3 hours
MRE 5217	Systems Analysis and Design	3 hours
MRE 5218	Management of Health Information Systems	3 hours
MRE 5219	Application of Computer Packages for Data Analysis	3 hours
MRE 5858	Research Methods	3 hours
Group B		12 Semester Hours
MAN 5830	Introduction to Management Information Systems	2 hours
HSA 6108	Health Care Organization and Management II	3 hours
MRE 6859	Research Seminar	1 hour
PHC 6160	Health Care Finance	3 hours
SPC 6219	Modern Communication Theory	3 hours
Total Minimum Semester Hours Required		39
Non-Health Care Professional		42

c. Specialization in Medical Laboratory Sciences 24 Semester Hours

Advanced professional education in Medical Laboratory Sciences is designed for the credentialed medical technologist, generalist, or specialist. Emphasis in Immuno-hematology* 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 Immunohematology emphasis must select a minimum of 14 hours from Group B resulting in a 41 semester hour program.

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.

GROUP A - Select from below:			12 Semester Hours
MLS 6890	Advanced Clinical Practicum I		3 hours
MLS 6891	Advanced Clinical Practicum II		3 hours
MLS 6892	Advanced Clinical Practicum III		3 hours
MLS 6893	Advanced Clinical Practicum IV		3 hours
MLS 6338	Advanced Hemostasis		3 hours
MLS 5509	Clinical Immunology		3 hours

Additional Medical Laboratory Sciences specialty courses will be developed.

GROUP B - Select from below:			12 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

COLLEGE OF HEALTH COURSES

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)
Definition, scope, and determinants of health and illness; organization for assuring health and preventing, treating, or coping with illness; general principles of planning and organization of health and health care organizations and agencies.

HSA 6108 Health Care Organization and Management II 3 cr (3,0)
PR: HSC 6425 or equivalent. (Continuation of HSC 6425 Health Care Organization and Management I.) Principles of management of nonprofit organizations. Laws and agencies governing public and therapeutic health systems; health services administration (therapeutic); organization and administration of state and local public health systems.

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 6247 Health Science Education 3 cr (3,0)
PR: Graduate status or C.I. The study and development of educational programs within the health care institution or agency.

HSC 6306 Health Science Program Development and Operation	3 cr (3,0)
PR: Graduate status or C.I. A study of the educational and health programs in the education institution setting.	
HSC 6555 Principles and Practice of Medicine	3 cr (3,0)
A comprehensive survey of medicine.	
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 6911 Scientific Inquiry in the Health Professions	3 cr (3,0)
Research design and evaluation in the health professions. (Covers principles of biostatistics.)	
HSC 6946 Practicum (in Environmental Health)	3 cr (3,0)
Preceptorship with a practicing environmental health professional under the supervision of a member of the faculty.	
HSC 6946 Practicum (in Health Administration)	3 cr (3,0)
Preceptorship with a practicing health administrator under the supervision of a member of the faculty.	
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.	
MLS 5509 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 6338 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 6890 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 6891 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 6892 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 6893 Advanced Clinical Practicum IV**3 cr (2,15)**

PR: C.I. Advanced study in one of the clinical laboratory areas listed in MLS 6890.

MRE 5217 System Analysis and Design**3 cr (3,0)**

Concepts of systems analysis, planning, and design; criteria for assessing information needs; computer system selection; project management allocation and control.

MRE 5218 Management of Health Information Systems**3 cr (3,0)**

PR: MAN 5830. Administration of computer-based information systems; security; policy formulation; health data in decision-making, interpretation of health data.

MRE 5219 Application of Computer Packages for Data Analysis**3 cr (3,0)**

PR: MRE 5217. Application of packaged statistical programs in analysis of data from health sciences. Emphasis on use and interpretation of computer output.

MRE 5858 Research Methods**3 cr (3,0)**

PR: HSC 6911, graduate status or C.I. Research topic design using health information; research methodologies using statistical techniques; research designs as they relate to health care organizations.

MRE 6859 Research Seminar**3 cr (3,0)**

PR: Prior permission of academic advisor. Identify research topics; proposal topics; proposal preparation; literature search.

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 6700 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: Graduate status or C.I. A survey of speech, language, and hearing disorders for habilitative personnel and other interested professionals.

SPA 5132 Physiological Acoustics**4 cr (4,3)**

PR: Graduate status or C.I. Lectures, readings and experiments pertaining to the subjective reception of sound.

SPA 5225 Fluency Disorders**3 cr (3,0)**

PR: Graduate status or C.I. Identification and evaluation of disorders of rhythm. Emphasis will be on methods of intervention in disorders of fluency.

SPA 5225L Fluency Disorders Laboratory**1 cr (0,2)**

PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.

- SPA 5307 Differential Diagnosis of Auditory Disorders** 3 cr (3,0)
PR: Graduate status or C.I. Clinical techniques in pure tone speech, acoustic impedance and electro-physiologic response audiometry.
- SPA 5358 Aural Habilitation/Rehabilitation** 4 cr (4,0)
PR: Graduate status or C.I. Principles and procedures involved in speech and language acquisition, management, utilization of residual hearing, speech reading and the use of hearing aids.
- SPA 5458 Therapeutic Communication** 3 cr (3,0)
PR: Graduate status or C.I. Practical interviewing and counseling in the area of Communicative Disorders. Emphasis is on facilitating clinician-client interactions.
- SPA 5553 Differential Diagnosis in Speech and Language** 3 cr (3,0)
PR: Graduate status or C.I. Administration and interpretation of evaluation techniques, including standardized tests, will be presented. Emphasis will be on those techniques which allow for differential diagnosis of speech and language disorders.
- SPA 5553L Differential Diagnosis in Speech and Language Laboratory** 1 cr (0,4)
PR: Graduate status or C.I. Students will be assigned to diagnostic teams in which they will apply the techniques presented in SPA 5553. Experiences will include test administration, interviewing, writing of diagnostic reports and oral presentations with staffings.
- SPA 5600 Administration and Management of Communicative Disorders Programs** 3 cr (3,0)
PR: Graduate status or C.I. Methods and techniques for organization and administration of Speech/Language and Hearing Disorders in public school, hospital, rehabilitation center and private practice facilities.
- SPA 5805 Research in Communicative Disorders** 3 cr (3,0)
PR: STA 4163, Graduate status or C.I. This course is designed to introduce the student to empirical research in the area of communication disorders. Emphasis is on hypothesis testing, methodology, analysis and interpretation of results.
- SPA 6131 Measurements in Speech Science** 3 cr (1,4)
PR: Graduate status or C.I. The application of instrumentation to research in normal speech and language behaviors. Measurements include use of electronic instruments, such as the oscilloscope.
- SPA 6204 Advanced Studies in Communicative Disorders: Articulation** 3 cr (3,0)
PR: Graduate status or C.I. Advanced theory, diagnostic techniques and therapeutic procedures for articulation disorders. May be repeated for credit.
- SPA 6204L Advanced Studies in Communicative Disorders: Articulation Laboratory** 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in articulation disorders. May be repeated for credit.
- SPA 6211 Voice Disorders** 3 cr (3,0)
PR: Graduate status or C.I. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate and other disorders of the vocal mechanisms.
- SPA 6211L Voice Disorders Laboratory** 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.
- SPA 6308 Auditory Evaluation and Assessment Procedures for Special Populations** 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, electroacoustic measurements, coupling techniques, and orientation and counseling.
- SPA 6353 Hearing Conservation** 4 cr (4,0)
PR: Graduate status or C.I. Industrial audiometry, community noise abatement and public school hearing conservation.

SPA 6403 Advanced Studies in Communicative Disorders: Language **4 cr (4,0)**

PR: Graduate status or C.I. Presentation of the syntactic, semantic and pragmatic nature of children's language disorders. Emphasis will be on techniques and methods of diagnosis and intervention with children from birth through adolescence. May be repeated for credit.

SPA 6410 Language Problems in Adults **4 cr (4, 0)**

PR: Graduate status or C.I. A study of the language disorders in adults associated with neurological problems, brain injury, systemic disease and aging.

SPA 6505 Clinical Practicum in Speech Pathology-Language **1 cr (0,8)**

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 **1 cr (0,8)**

PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated with change of content.

SPA 6908* Directed Independent Studies **1-6 cr**

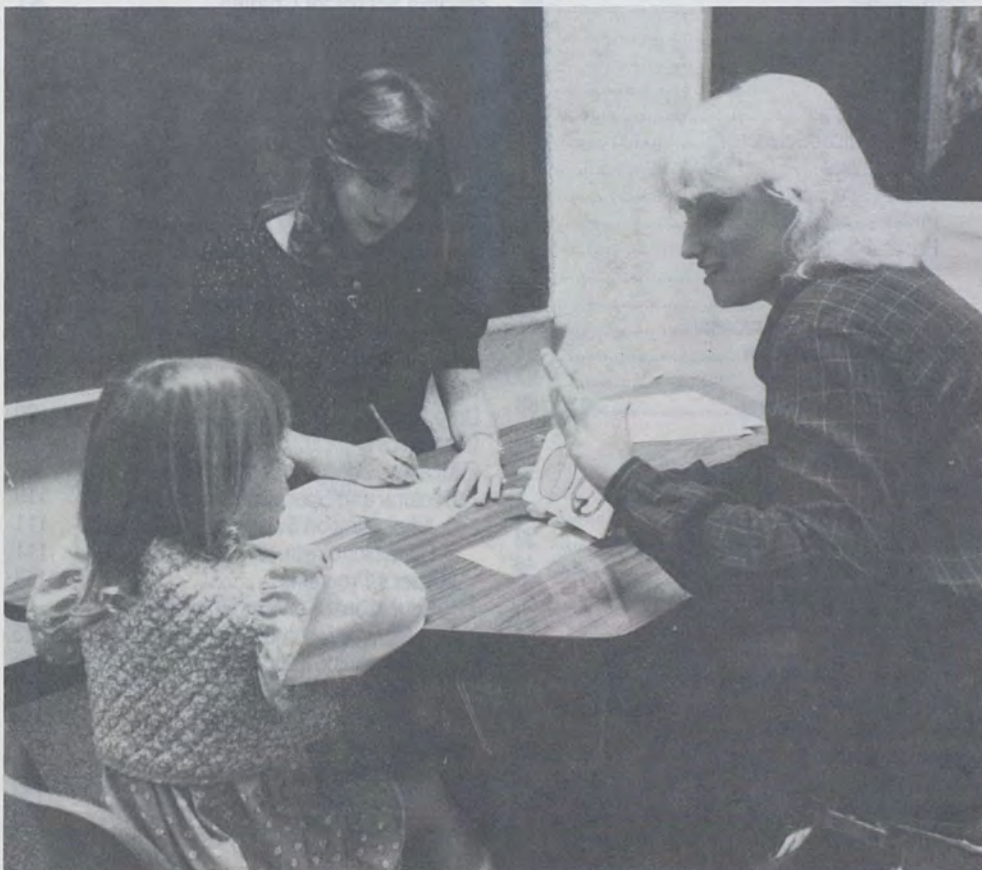
SPA 6918* Directed Independent Research **1-6 cr**

SPA 6938* Special Topics/Seminars - May be repeated for credit. **1-6 cr**

SPA 6946* Internship, Practicums, Clinical Practice **1-6 cr**

SPA 6971* Thesis **1-6 cr**

*Must present at registration an authorization form which is obtained from the department office.



INDEX

Academic		Cardiopulmonary Sciences.....	189
Calendar.....	12-13	Central Florida Research Park.....	11
Load—Graduate.....	31	Change of Major or College.....	23
Policies.....	33	Chemistry.....	50
Provisional.....	33	Children, Creative School for.....	40
Standards.....	33	Clinical Psychology.....	80
Accounting.....	97	Colleges	
Accreditation, University.....	6	Arts and Sciences.....	45
Business Administration.....	6, 93	Business Administration.....	93
Education.....	6	Education.....	107
Add/Drop Policy.....	20	Engineering.....	153
Admissions.....	17	Health.....	185
Foreign Student.....	18	Communication.....	52
Graduate.....	21	Comprehensive Exams (See also College).....	33
Postbaccalaureate.....	22	Computer Engineering.....	155
Provisional.....	21	Computer Science.....	54
Reactivation.....	20	Continuous Attendance.....	20
Readmission.....	20	Counseling and Testing Center.....	39
Appeal, Graduate.....	21, 23	Course Classification.....	43
Application for Graduate Degree.....	34	Course Descriptions (See each College Program)	
Deadline (See Calendar).....	12, 13	Course Levels.....	33
Arts and Sciences, College of.....	45	Course Loads.....	31
Masters Programs		Course Numbering.....	43
Biological Sciences.....	46	Creative School for Children.....	40
Chemistry.....	50	Creative Writing (See English).....	64
Communication.....	52	Credits	
Computer Science.....	54	Recency of.....	33
English.....	63	Transfer.....	32
History.....	66	By Exam.....	32
Mathematical Science.....	69	Residence.....	32
Microbiology.....	48	Degrees Offered (See inside cover)	
Music (See Education).....	121	Degree Requirements (See individual College)	
Physics.....	73	Dismissal from Graduate Status.....	23
Political Science.....	76	Dissertation.....	37
Psychology.....	79	Doctoral Program Requirements.....	35
Clinical.....	80	Computer Science.....	58
Industrial/Organizational.....	81	Engineering.....	172
Public Administration.....	84	Dormitory.....	39
Sociology, Applied.....	87	Drop Policy.....	20
Statistical Computing.....	88	Economics.....	99
Doctoral Program		Education, College of, Programs.....	108
Computer Science.....	58	Doctoral and Specialist Programs.....	110
Average		Administration/Supervision.....	111
Overall, UCF.....	33	Curriculum/Instruction.....	111
Program of Study.....	33	Master's Programs.....	113
Biological Sciences.....	46	Educational Services Specialties	
Business Administration, College of, Programs.....	93	Administration and Supervision.....	113
Accounting.....	97	Counselor Education.....	115
Business Administration.....	96	Educational Media.....	117
Economics, Applied.....	99	Instructional Technology.....	118
Business Administration.....	97	Exceptional Student Education	
Calendar, Academic.....	12-13	Specialization.....	126
Campuses		School Psychology.....	131
Area Campuses.....	14	Physical Education.....	128
Map, Campus.....	15		

Exercise Physiology.....	129	Foreign Students (See International Students)	39
Perceptual Motor Development.....	130	Foundation, UCF	10
Wellness Management	129	Full-time Student	31-32
Elementary Education	118	Grades, Unsatisfactory Graduate.....	34
Art (Visual Arts) Education	118	Grade Point Average.....	33
Early Childhood	119	Graduate Council.....	29
Mathematics.....	120	Graduate Management Admission Test (GMAT).....	17
Gifted Education	136	Graduate Record Examination (GRE).....	17
Music.....	121	Graduate Studies, Office of.....	29
Reading.....	122	Graduate Studies	
Secondary Education - M.Ed. or M.A.	132	Admission to	21
Business-Vocational	132	Dismissal from	23
English (Language Arts)	133	Provisional Status	21
Gifted Education	136	Regular Status	21
Mathematics.....	134	Handicapped Student Services	40
Science	134	Health, College of.....	185
Social Science	135	Communicative Disorders.....	185
Vocational Education.....	137	Health Sciences	188
Employment, UCF.....	31	Cardiopulmonary Specialization.....	189
Assistantships	11	Health Service, Student.....	39
Engineering, College of.....	153	History.....	66
Master's Programs	158	Hours	32
Civil Engineering	160, 172	Coding for Course Description	43
Computer Engineering	160	Minimum for Degree	32
Computer Integrated Manufacturing	162	Semester, Maximum	31
Computer Systems.....	163	Housing Policy.....	39
Construction	164	Incomplete Grades (also see Calendar)	34
Electrical Engineering.....	160	Independent Study	32
Electrical Systems & Sciences.....	165	Industrial	
Energy Systems	165	Chemistry	50
Engineering Administration	166	Psychology.....	81
Environmental Engineering	167	Instructional Resources	42
Environmental Sciences.....	167	Intent to Graduate Form.....	34
Environmental Systems Management	171	International Students.....	18
Engineering Systems Analysis.....	166	International Students Services.....	39
Industrial Engineering.....	161	Journals, Sponsored.....	8
Manufacturing Engineering	161	Language Requirement.....	32
Mechanical Engineering	161	Late Fees.....	25
Mechanical Systems	168	Library.....	7
Operations Research	168	Management.....	94
Simulations Systems.....	169	Maps, Campus	15
Structures & Foundations.....	170	Orlando Area.....	14
Transportation Systems	170	Master's Degree Requirements (See individual Program)	
Doctoral Programs	172	Accounting	97
Civil Engineering	172	Biological Sciences	46
Computer Engineering	172	Business Administration.....	96
Electrical Engineering.....	172	Chemistry, Industrial	50
Environmental Engineering	172	Communication	52
Industrial Engineering.....	172	Communicative Disorders.....	185
Mechanical Engineering.....	172	Computer Science	54
English	63	Economics.....	99
Evening Student Services	40	Education	108
Examinations	33	Engineering	153
Faculty (See each College)		Civil Engineering	160, 172
Fees.....	25		
Financial Aid	11		
Florida Resident—Defined	27		

Computer Integrated Manufacturing	162	Fees	25
Computer Systems	163	Research, Central Florida Research Park	11
Construction	164	Residence Requirement	32, 35
Electrical Engineering	160	Residency, Florida (defined)	27
Electrical Systems & Sciences	165	Second Graduate Degree	23
Energy Systems	165	Sociology	87
Engineering Administration	166	Specialist Degree	110
Engineering Mathematics and Computer Systems	163	Speech	
Engineering Systems Analysis	166	Communicative Disorders	185
Environmental Engineering	167	Speech, Communication	52
Environmental Sciences	167	Statistical Computing	88
Environmental Systems Management ...	171	Student	
Industrial Engineering	161	Activities	39
Manufacturing	161	Area Campuses Services	40
Mechanical Engineering	161	Center/Student Union	40
Mechanical Systems	168	Conduct	41
Operations Research	168	Counseling	39
Structures & Foundations	170	Employment	31
Transportation Systems	170	Fees	25
English	63	Financial Aid	11
Health Science	188	Government	40
History	66	Health Record	19
Mathematical Science	69	Health Services	39
Microbiology	48	Housing	39
Physics	73	International	39
Political Science	76	Loans	11
Psychology	79	Non-Degree	22
Clinical	80	Records	41
Industrial/Organizational	81	Responsibility	31, 40
Public Administration	84	Services	37
Sociology, Applied	87	Testing	33
Statistical Computing	88	Table of Contents	3
Mathematical Science	69	Testing and Counseling	39
Medical History Report	19	Tests	
Minority Student Services	39	TOEFL (Test of English as a Foreign Language)	18-19
Music	72	GMAT (Graduate Management Admission Test)	17
Non-Degree Student	22	GRE (Graduate Record Examination)	17
Office of Graduate Studies	29	Thesis Requirement (See individual Programs)	
Orlando Vicinity Map	14	Transfer	32
Petition for Waivers	31	Credits, Graduate	32
Physics	73	Credits, Doctoral	36
Philosophy, UCF Statement of	6	Grades	32
Political Science	76	Traveling Scholar Program	10
Postbaccalaureate Status	22	Tuition	25
Program of Study	31	Non-Florida Waiver	11
Psychology	79	Unsatisfactory Grades	34
Public Administration	84	Vehicle Registration	25
Readmission	20	Veterans Affairs	41
Recreational Services	42	Withdrawal Policy	20
Reactivation	20		
Records	41		
Confidentiality	41		
Deadline	19		
Validity of Documents	19		
Refund of Fees (Also see Calendar)	26		
Registration Date (See Calendar)			
During Term of Graduation	34		

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