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BULLETIN

OF



The University of Memphis



1994-1995 GRADUATE CATALOG

Graduate Catalog Edition

Volume LXXXIII, Number 4, July 1994

The course offerings and requirements of **The University of Memphis** are continually under examination and revision. This catalog presents the offerings and requirements in effect at the time of publication, but is no guarantee that they will not be changed or revoked. However, adequate and reasonable notice will be given to students affected by any changes. This catalog is not intended to state contractual terms and does not constitute a contract between the student and the institution.

The University of Memphis reserves the right to make changes as required in course offerings, curricula, academic policies, and other rules and regulations affecting students to be effective whenever determined by the institution. These changes will govern current and formerly enrolled students. Enrollment of all students is subject to these conditions.

The University of Memphis provides the opportunity for students to increase their knowledge by providing programs of instruction in the various disciplines and programs through faculty who, in the opinion of the institution, are qualified for teaching at the college level. The acquisition and retention of knowledge by any student is, however, contingent upon the student's desire and ability to learn and his or her application of appropriate study techniques to any course or program. Thus, **The University of Memphis** must necessarily limit representation of student preparedness in any field of study to that competency demonstrated at that specific point in time at which appropriate academic measurements were taken to certify course or program completion.

The Bulletin of **The University of Memphis** (USPS 779-380) is published four times a year in April, May, June, and July by **The University of Memphis**. Second-class postage paid at Memphis, Tennessee 38152. POSTMASTER: Send address changes to The Bulletin of **The University of Memphis**, Memphis, TN 38152.

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BULLETIN

OF



The University of Memphis

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UNIVERSITY OF MEMPHIS
UNIVERSITY LIBRARIES
MEMPHIS, TN 38152



1994-1995 GRADUATE CATALOG

V. LANE RAWLINS, PH. D., PRESIDENT

CECIL C. HUMPHREYS, PH. D., PRESIDENT EMERITUS
THOMAS G. CARPENTER, PH. D., PRESIDENT EMERITUS

THE EIGHTY-THIRD SESSION WILL OPEN AUGUST 24, 1994

THE UNIVERSITY OF MEMPHIS OFFERS EQUAL EDUCATIONAL OPPORTUNITY TO ALL PERSONS WITHOUT REGARD TO RACE, RELIGION, SEX, CREED, COLOR, NATIONAL ORIGIN, OR DISABILITY. THE UNIVERSITY DOES NOT DISCRIMINATE ON THESE BASES IN THE RECRUITMENT AND ADMISSION OF STUDENTS AND THE OPERATION OF ANY OF ITS PROGRAMS AND ACTIVITIES, AS SPECIFIED BY FEDERAL LAWS AND REGULATIONS. THE DESIGNATED COORDINATORS FOR UNIVERSITY COMPLIANCE WITH SECTION 504 OF THE REHABILITATION ACT OF 1973 AND THE AMERICANS WITH DISABILITIES ACT OF 1990 ARE THE VICE PRESIDENT FOR STUDENT AFFAIRS AND THE EQUAL EMPLOYMENT COMPLIANCE OFFICER.

DIRECTORY FOR CORRESPONDENCE

Inquiries will receive attention if addressed to the administrative offices below at The University of Memphis, Memphis, Tennessee 38152.

Admission Director, Graduate and International Admissions

Assistantships and Fellowships Chair of appropriate department or director of graduate studies of appropriate department

Degree Requirements Dean of the Graduate School or chair of appropriate department

Entrance Examinations Director of Testing, (901) 678-2428

Financial and Business Affairs Director of Finance, (901) 678-2261

Financial Aid Director of Student Aid, (901) 678-2303

Graduate Studies Chair of appropriate department or director of graduate studies of appropriate college or department

Disabled Student Services Director of Student Disability Services, (901) 678-2880

Housing Director of University Housing, (901) 678-2295

Institutes Chair of appropriate department

Publications Office of University and Community Relations, (901) 678-2609

Registration Registrar, (901) 678-2671

Research and Grants Vice Provost for Research, (901) 678-2590

Testing Arrangements Director of Testing, (901) 678-2428

Transcripts Associate Dean, Admissions and Records (Records), (901) 678-3927

Veterans' Services Coordinator of Veterans' Services, (901) 678-2996

Vice Provost for Research Administration Building, (901) 678-2590

Dean of the Graduate School Administration Building, (901) 678-2531

President of the University Administration Building, (901) 678-2234

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1994-95 UNIVERSITY CALENDAR

The calendar is subject to change at any time prior to or during an academic term due to emergencies or causes beyond the reasonable control of the institution, including severe weather, loss of utility services, or orders by federal or state agencies. (TBR 2:04:00:01)

1994						
S	M	T	W	T	F	S
AUGUST						
	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						
4	5	6	7	8	9	3
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	
OCTOBER						
2	3	4	5	6	7	1
9	10	11	12	13	14	8
16	17	18	19	20	21	15
23	24	25	26	27	28	22
30	31					29
NOVEMBER						
6	7	8	9	10	11	5
13	14	15	16	17	18	12
20	21	22	23	24	25	19
27	28	29	30			26
DECEMBER						
4	5	6	7	8	9	3
11	12	13	14	15	16	10
18	19	20	21	22	23	17
25	26	27	28	29	30	24
1995						
S	M	T	W	T	F	S
JANUARY						
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				
FEBRUARY						
5	6	7	8	9	10	4
12	13	14	15	16	17	11
19	20	21	22	23	24	18
26	27	28				25
MARCH						
5	6	7	8	9	10	4
12	13	14	15	16	17	11
19	20	21	22	23	24	18
26	27	28	29	30	31	25
APRIL						
2	3	4	5	6	7	1
9	10	11	12	13	14	8
16	17	18	19	20	21	15
23	24	25	26	27	28	22
30						29
MAY						
7	8	9	10	11	12	6
14	15	16	17	18	19	13
21	22	23	24	25	26	20
28	29	30	31			27
JUNE						
4	5	6	7	8	9	3
11	12	13	14	15	16	10
18	19	20	21	22	23	17
25	26	27	28	29	30	24
JULY						
2	3	4	5	6	7	1
9	10	11	12	13	14	8
16	17	18	19	20	21	15
23	24	25	26	27	28	22
30	31					29
AUGUST						
6	7	8	9	10	11	5
13	14	15	16	17	18	12
20	21	22	23	24	25	19
27	28	29	30	31		26

FALL SEMESTER 1994

AUGUST 24: Meeting of the new university faculty, 8:30 A.M. Meeting of entire university faculty, 10:30 A.M., followed by meetings of colleges and departments.

AUGUST 25: Faculty advising for Fall 1994 Registration.

AUGUST 26 and 29-30: FALL 1994 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

AUGUST 1: Classes begin.

SEPTEMBER 5: Holiday: Labor Day.

SEPTEMBER 6: Last day to add or to register for Fall 1994 courses.

SEPTEMBER 28: Last day for removing Summer Session "Incomplete" grades.

OCTOBER 14: Last day to drop courses. Last day to withdraw from the university.

NOVEMBER 23: Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in May 1994.

NOVEMBER 24-27: Holiday: Thanksgiving.

DECEMBER 7: Classes end.

DECEMBER 8: Study Day.

DECEMBER 9-15: Final examinations.

DECEMBER 17: Commencement.

SPRING SEMESTER 1995

JANUARY 16: Holiday: Martin Luther King's Birthday.

JANUARY 17: Faculty advising for Spring 1995 Registration.

JANUARY 18-20: SPRING 1995 Regular Registration and Drop/Add. For detailed dates and times see the *Schedule of Classes*.

JANUARY 23: Classes begin.

JANUARY 26: Last day to add or to register for Spring 1995 courses.

JANUARY 31: Last day for removing Fall "Incomplete" grades.

MARCH 10: Last day to drop courses. Last day to withdraw from the university.

MARCH 19-26: Spring Break.

MARCH 24: University offices closed for Spring Holiday.

APRIL 12: Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in August 1995.

MAY 3: Classes end. Faculty convocation.

MAY 4: Study Day.

MAY 5-11: Final examinations.

MAY 12: Commencement.

Dead Week. Definition: The four day period preceding final examinations. No student social or athletic functions shall be scheduled during Dead Week.

Study Day. Definition: The day prior to final examinations during most regular semesters. No academic activities shall be scheduled on Study Day. No study or review sessions which the student may feel obligated to attend may be scheduled.

Final Examination Period. No examination shall be given at a time other than the scheduled time except with written permission from the department chair and the college dean. No social or athletic functions shall be scheduled during the Final Examination Period.

Intercollegiate athletics are excepted from the above policies.

**FIRST SUMMER TERM
1995**

JUNE 1: Faculty advising.

JUNE 1-2: SUMMER 1995 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JUNE 5: Classes begin.

JUNE 6: Last day to add or to register for First Term courses.

JUNE 20: Last day to drop First Summer Term courses.

Last day for First Summer Term students to withdraw.

JUNE 26: Last day for removing Spring Semester "Incomplete" grades.

JULY 4: Holiday: Independence Day.

JULY 6: First Summer Term classes end.

JULY 7: First Summer Term final examinations.

**SECOND SUMMER TERM
1995**

JULY 10: SECOND SUMMER 1995 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JULY 11: Second Summer Term classes begin.

JULY 11: Last day to add or to register for Second Summer Term courses.

JULY 19: Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in December 1995.

JULY 26: Last day to drop Second Summer Term courses.

Last day for Second Summer Term students to withdraw from the university.

AUGUST 10: Second Summer Term classes end.

AUGUST 11: Second Summer Term final examinations.

AUGUST 13: Commencement.

**EXTENDED SUMMER TERM
1995**

JUNE 1: Faculty advising.

JUNE 1-2: SUMMER 1995 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JUNE 5: Classes begin.

JUNE 6: Last day to add or to register for Extended Term courses.

JUNE 26: Last day for removing Spring Semester "Incomplete" grades.

JULY 4: Holiday: Independence Day.

JULY 7: Last day to drop Extended Summer Term courses.

Last day for Extended Summer Term students to withdraw from the university.

JULY 8-10: Summer Break.

JULY 10: SECOND SUMMER 1995 Regular Registration and Drop/Add. For details, see the *Schedule of Classes*.

AUGUST 10: Extended Summer Term classes end.

AUGUST 11: Extended Summer Term final examinations.

AUGUST 13: Commencement.

DEADLINE DATES

For those who expect to receive
a Master's, Specialist or Doctorate on:

December 17
1994

May 12
1995

August 13
1995

LAST DAY FOR:

Filing "Intent to Graduate Card" with the Graduate School

September 13

January 27

June 7

Filing "Application for Master's & Doctoral Candidacy Form"

September 13

January 27

June 7

Submission of final draft of theses/dissertations to Graduate School for review

November 18

April 14

July 19

Final submission of theses, dissertations and comprehensive examination results to the Graduate School

December 2

April 28

July 28

1. THE GRADUATE SCHOOL

DAVID H. CISCEL, Ph.D.,
Interim Dean

DANIEL J. POJE, Ed.D.,
Assistant Dean

WILLIAM G. CRUMP, Ed.D.,
Director of Graduate and
International Admissions

The *Graduate School* of The University of Memphis is the center of advanced study and research within the University. The basic objectives of the *Graduate School* are:

1. to preserve and disseminate knowledge;
2. to extend knowledge through research; and
3. to prepare men and women to assume responsible and useful roles in a changing society.

The Doctor of Philosophy degree is awarded in audiology and speech pathology, biology, business, chemistry, counseling psychology, engineering, geophysics, history, mathematics, music, philosophy, and psychology. The degrees of Doctor of Education, and Doctor of Musical Arts are awarded by the College of Education and the College of Communication and Fine Arts, respectively. The College of Education also offers the degree of Education Specialist with a major in education. The Cecil C. Humphreys School of Law offers the Juris Doctor degree.

Master's degrees are offered in fifty-one major areas through five colleges and one independent department. The degrees include Master of Science, Master of Arts, Master of Fine Arts, Master of Arts in Teaching, Master of Education, Master of Business Administration, Master of Music, Master of City and Regional Planning, Master of Public Administration, and Master of Health Administration.

Mission of the University

From the opening of its doors in 1912 as a normal school for training teachers to its present status as one of Tennessee's two comprehensive universities, The University of Memphis has been thrust forward by the growth of Memphis and the Mid-South. A town oriented to a rural economy and culture in 1900 grew into a large urban and commercial center mid-century, and the city's public institution of higher learning experienced comparable growth.

The metropolitan and regional requirements for more highly trained university graduates have, of necessity, caused the university to expand all its offerings in arts and sciences, business, the fine arts, education, engineering and technology, law, and several special professional fields. Degrees range from the baccalaureate through the doctorate.

Approximately 75 percent of the full-time faculty have earned the highest possible degree in their fields. The university strives to optimize its resources in its quest for excellence through teaching, research, and service.

With an enrollment of over 20,000, The University of Memphis is committed to developing programs of the highest quality, for only through such a commitment will it be a standard of quality in higher education for the citizens of our service area. As the comprehensive university of the State University and Community College System of Tennessee, The University of Memphis is striving to increase the ratio of doctoral programs it offers, which will also require an increased emphasis on research and scholarship activity. The university is committed to serving a diverse student body of all races, sexes, and nationalities. Our students are expected, upon graduation, to be able to compete effectively with their counterparts from any other respected university in the nation.

The primary mission of The University of Memphis is to be a comprehensive urban university committed to scholarly accomplishments of our students and faculty and to the enrichment of our community, state, and nation through principles of academic integrity, sound management, and equal opportunity. The university strives to achieve and maintain this mission as part of two major communities: the national and international academic community of scholars and students; and the state of Tennessee and the Mid-South, especially metropolitan Memphis. In both communities, the university strives for excellence and seeks to contribute substantially to the quality of life of its various constituencies.

History

The roots of the university date back to September 12, 1912, with the establishment and beginning of classes at West Tennessee State Normal School, which provided for the training of primary and secondary education teachers. However, the seeds for the normal school's creation were sown three years earlier, in 1909, when the Tennessee General Assembly passed a General Education law calling for the establishment and maintenance of three normal schools, one school located in each of the three grand divisions of the state.

The eastern edge of Memphis became the site for West Tennessee State Normal School, which in 1929 became West Tennessee State Teachers College. In 1941, the College's curriculum in liberal arts was expanded, and the name was changed to Memphis State College, an institution serving three to four thousand students. The undergraduate program was reorganized into three schools and a graduate school added in 1951.

Memphis State achieved its status as a university in 1957 and on July 1, 1994, the name was officially changed to The University of Memphis.

Governing Body

The governance and control of The University of Memphis is vested in The Tennessee Board of Regents. The Board of Regents consists of eighteen members including thirteen appointed by the Governor; four *ex officio* members — the Governor, the Commissioner of Education, the Commissioner of Agriculture, and the Executive Director of the Tennessee Higher Education Commission — and one statutory member. Nine appointed members are from each congressional district and three members are approved at-large from different geographical areas of the state. A student regent is appointed from among the system institutions for a one-year term.

Organization

The schools and colleges that make up the university are The Graduate School, The Cecil C. Humphreys School of Law, The University College (undergraduate), The Loewenber School of Nursing, The School of Audiology and Speech-Language Pathology, and five colleges offering graduate and undergraduate programs: The College of Arts and Sciences, The Fogelman College of Business and Economics and The School of Accountancy, The College of Communication and Fine Arts, The College of Education, and The Herff College of Engineering.

THE MEMPHIS COMMUNITY

Memphis is one of the South's largest and most attractive cities. As a medical, educational, communication, distribution, and transportation center, Memphis of-

fers a rich and full range of research opportunities and cultural experiences. The city, known worldwide for its musical heritage, has many fine restaurants, museums, and theaters, as well as one of the nation's largest urban park systems. Annual events include the St. Jude Liberty Bowl Football Classic, Memphis in May International Festival, Federal Express St. Jude Memphis Golf Classic, the Carnival Memphis, and Mid-South Fair. The medical complex in Memphis is the South's largest and one of the nation's foremost centers of medical research. A public transportation system provides easy travel between the University and other parts of the city.

The University's modern and beautifully landscaped campus is centrally located in an attractive residential area of Memphis, with shopping, recreation, and entertainment centers nearby. In addition to the facilities on the Main Campus, the University has research and athletic training facilities and married students' housing on the South Campus.

Research Facilities

Library Facilities

The University of Memphis Libraries include the main library and six branch libraries—Audiology and Speech Pathology, Chemistry, Engineering, Mathematics, Music, and Earth Sciences—contiguous to the appropriate department.

The main library offers many services through its reference department, including information retrieval via on-line data-base searching and in-house CD Rom index searching. The government documents department is the U.S. Government Regional Federal Documents Depository for the State of Tennessee, and continues to serve as a depository for all State of Tennessee documents. The special collections department's largest collection—Mississippi Valley Collection—reflects the history and culture of the Mississippi River valley.

The University of Memphis Libraries' on-line catalog of their collections is available through terminals in the main library and the branch libraries. Dial-access to the catalog is also available from compatible personal computers.

The University of Memphis Libraries maintains agreements with other local institutions for shared use of library collections by students, faculty, and staff.

Computer Facilities

Computing support for the instructional program of the university and for scholarly research is provided by Computer Services. In addition to the two VAX computers and the UNISYS computer serving administrative computing, the central academic computing system is composed of

a Digital Equipment Corporation (DEC) VAX 8820 and a DEC VAX 6430. This system supports interactive, batch, and network processing. The Training Center in the Smith Chemistry Building contains 29 terminals and is used for hands-on training for faculty, staff, and students. Computing laboratories with academic mainframe terminals and remote high-speed line printers are located in the Herff College of Engineering, the Fogelman College of Business and Economics, the Winfield Dunn Building, the Richardson Towers Building, and the Ball Education Building. The Winfield Dunn Building lab also contains interactive, high-resolution graphics terminals. Consultants are available in Computing Services to assist academic mainframe computer users in the use of the computing facilities including installed statistical and non-statistical software and in the use of the various networks including Internet. Additionally, consultants are available to assist with instruction in microcomputers and with installation and maintenance services for microcomputers. Access is available to researchers through the academic mainframe system. Consultants and labs for demonstration and training are also available in the Life Sciences Building for microcomputer users.

More than 500 ports are available for connection to the campus-wide computer network. The campus-wide computer network is an optical-fiber based network utilizing many protocols including TCP/IP, DECnet, and LAT. Special purpose minicomputers are available in several individual departments, including Chemistry, Mathematical Sciences, and Engineering, as well as in the Computer Center. In addition, more than 2,000 microcomputers are available throughout the university to directly support instruction and research.

Fogelman Executive Center

The Fogelman Executive Center is a state-of-the-art conference and training facility designed to meet the needs of executives, managers, and professionals in all organizational areas. The center has fifty-one hotel rooms, twelve conference and seminar rooms (including two computer labs), and two dining rooms.

The staff of the Fogelman Executive Center provides coordination and planning services for all types of conferences and seminars. These services are available not only to conferences housed within the facility but also to programs at non-university locations. Additionally, the Fogelman Executive Center designs training and development programs for a wide range of managers and professionals. For these programs, center staff draw from the resources of The University of Memphis faculty, as well as outside experts, to conduct the programs.

Bureau of Business and Economic Research

The Bureau of Business and Economic Research is the organized research and public service unit of the Fogelman College of Business and Economics. The programs of the bureau include public service to government agencies (state and local) and the business community, continuing education, and applied general research.

Bureau of Educational Research and Services

The Bureau of Educational Research and Services conducts, promotes, and supports research, development, evaluation, and field services in the College of Education. Bureau personnel are active in the operation of projects for local, state, regional, and national education agencies. Services are provided to faculty members through staff development, funding source identification, proposal preparation assistance, and contract administration support.

Center for Earthquake Research and Information

Center for Earthquake Research and Information was established in 1977 by the Tennessee State Legislature to provide the citizens of Tennessee, governmental agencies, and the news media such services as the following: (1) accurate, immediate reports and background information on the occurrence of regional earthquakes; (2) scientific research related to the causes and consequences of local earthquakes and to the possibility of earthquake prediction; (3) studies related to the desirability of earthquake resistant construction; (4) advice to the populace, business, government, and insurance groups on the methods, means, and feasibility of reducing earthquake damage. The Center operates as a research organization of The University of Memphis. It supports some undergraduate student research in seismology and geophysics and civil engineering and cooperates with the Department of Geological Sciences in offering an undergraduate degree concentration in geophysics.

Center for Electron Microscopy

The Center for Electron Microscopy provides facilities and expertise in the field of electron microscopy. Users of the Center include researchers and graduate students in the biological and physical sciences.

Edward J. Meeman Biological Station

The Edward J. Meeman Biological Station was established in 1967 to encourage and foster scientific pursuits in natural history, ecology, and environmental biol-

ogy. Located about 23 miles northeast of the main campus and adjacent to Meeman-Shelby Forest State Park in northwestern Shelby County, the 623-acre station (with laboratory, classroom, and small conference facilities) provides students and faculty from The University of Memphis, as well as visiting investigators, with a unique site for research, teaching, and service activities. The station is an integral part of the Department of Biology.

Ecological Research Center

The Ecological Research Center (ERC) of the Department of Biology is organized to conduct and coordinate research, teaching, and service activities in ecology and related areas. Major areas of research include: fish culture, water quality, wildlife biology, endangered and threatened species, systematics, and physiological responses of organisms to the environment. The teaching program of the ERC provides a training program for students interested in pursuing careers in various professional fields and affords an opportunity for students to participate in activities involving contemporary environmental problems. Public service activities are primarily directed toward promoting environmental awareness and providing information and consultation services to those concerned with environmental problems.

Marcus W. Orr Center for the Humanities

The Center for the Humanities was founded in 1987 and renamed in 1991 in memory of Dr. Marcus Orr, professor of history. Its purpose is to support faculty and course development, independent and collaborative research, and public programs that foster an understanding of the importance of the humanities. The Center aims at establishing a sense of intellectual community among humanities faculty at the University. The center sponsors visiting scholars, course development grants, lectures, and a Humanities Fellows Program that supports faculty scholarship.

Center for Research on Women

Founded in 1982, the Center for Research on Women, located in the College of Arts and Sciences, has rapidly gained national recognition for its pioneering work on race, class, and gender. Its mission is to promote research in the field of women's studies with a focus on southern women and women of color in the United States.

Since its inception, the Center has received grants for research and research related activity from both foundation and government sources.

Center for the Study of Higher Education

The Center for the Study of Higher Education, located in the College of Education, conducts research and sponsors workshops and conferences in higher education.

Environmental Health and Toxicology Research Institute

The Environmental Health and Toxicology Research Institute serves as a focus for research on toxicological problems and for forming environmental policy. The Institute, located in the Department of Biology, also assists with graduate student and postdoctoral education and training.

Institute of Egyptian Art and Archaeology

The institute, founded in 1984 and designated a Tennessee Center of Excellence in 1985, is a component of the Department of Art at The University of Memphis. The institute is dedicated to the study of the art and culture of ancient Egypt through teaching, research, exhibition, and excavation. It is staffed by Egyptologists and art historians associated with the department's art history program. Its research library consists of more than 6000 Egyptological books and periodicals including precious and out-of-print volumes. Supporting the institute's programs is the University Gallery at The University of Memphis which houses the institute's growing collection of Egyptian antiquities, the largest in the Mid-South. The Institute also sponsors an epigraphic project at the Great Hypostyle Hall of the Karnak Temple.

Institute for Intelligent Systems

The Institute for Intelligent Systems is designed to bring together research and training in the broad areas of cognitive science, complex dynamical systems, artificial intelligence, and massively parallel computer (neural computing). Current research includes basic research, supported by grants from funding agencies, and applied research supported by industrial/governmental contracts. Ideas and techniques for research are gathered from the disciplines of cognitive psychology, computer science, philosophy of mind, neuroscience, linguistics, physics, and mathematics. Training should include

graduate courses, thesis and dissertation research, and industrial training in the form of workshops, seminars, and employee research participation.

Regional Economic Development Center

The Center represents the University in its outreach function in the field of economic development planning. In providing technical and management assistance to the public and private sectors, the Center also serves as a laboratory for interdisciplinary research and service by faculty and graduate students in solving problems of urban and regional development. The Center's professional planning staff have academic appointments and teach courses in urban and regional planning.

Speech and Hearing Center

Located in the medical center of Memphis, this facility became affiliated with the University in 1967. An additional site is located on the South Campus. Both locations serve children and adults with communication disorders. Students at the university may receive examinations at no charge, while faculty and staff are seen at 50% of normal charges. The University administers and operates the Center in cooperation with the Board of Directors of the Memphis Speech and Hearing Center, Inc.

Other Research Units

In addition to the described above units, The University of Memphis also recognizes a wide array of other research oriented units:

- Anthropological Research Center
- Barbara K. Lipman Early Childhood Center and Research Institute
- Center for River Studies
- Center for Economic Education
- Center for Environmental and Energy Education
- Center for Health Services Research
- Center for Manpower Studies
- Center for Voluntary Action Research
- Chualissa Indian Museum (C.H. Nash Museum)
- Groundwater Institute
- Neuropsychology and Evoked Potential Laboratory
- Office of International Studies
- Oral History Research Office
- Public Sector Labor Relations Center
- Robert Wang Center for International Business
- Southern Music Archive
- Transportation Studies Institute

Recognized Centers and Chairs of Excellence

The University of Memphis has been designated by the Tennessee Higher Education Commission as a location for centers and chairs of excellence. The units listed below receive special funding by the State in recognition of their status.

Centers of Excellence

- Center for Applied Psychological Research
- Center for Earthquake Research and Information
- Center for Research Initiatives and Strategies for the Communicatively Impaired
- Center for Research in Education Policy
- Center of Excellence in Egyptian Art and Archaeology

Academic Services

Center for Instructional Service and Research

The Center for Instructional Service and Research (CISR) supports the instructional programs of The University of Memphis. Located in the John Willard Brister Library, CISR provides services through the Learning Media Center, Graphic Design and Production, and Evaluation Service. The Learning Media Center (LMC) maintains the University's collection of instructional audiovisual programs, including 16mm films, audio tapes, video cassettes, sound-slide and sound-filmstrip sets, and some computer software. Equipment is available for faculty use in the classroom. A laboratory with personal computers and printers is available during LMC hours of individual faculty, staff, and student use. Graphic Design and Production provides services to help faculty and staff with the presentation and communication of information to others. Posters, overhead transparencies, photostatic copies for publication, and specifications for materials to be typeset can be provided. Charts and graphs for University publication or representation, or both, along with design and illustration are also offered. Evaluation Service conducts student evaluations of classroom instruction.

Psychological Services Center

The Psychological Services Center, located on the first floor of the Psychology Building, offers both psychological evaluations and therapeutic services to children

and adults. For appointments or information, contact the Center.

Office for Students with Disabilities

The Office for Students with Disabilities provides information and support services to enable students with disabilities to fully access the educational opportunities at The University of Memphis. Services include: attendant referral; assistance arranging readers, notetakers, tutors, interpreters, and special test accommodations; assistance securing special materials; adaptive computer equipment; campus shuttle service; priority registration; coordination of adapted housing accommodations, etc.

All students who have a permanent disability are encouraged to register with the Office for Students with Disabilities. This registration entitles applicants and students to all the legal rights accorded persons with disabilities.

Since some support services require advance notice, applicants are requested to provide sufficient notice to the Office for Students with Disabilities of anticipated needs and expected date of enrollment.

Academic Common Market

The Academic Common Market is designed to allow students from southern states to pay in-state tuition while attending The University of Memphis. This arrangement is available only for students whose home states do not offer the designated program. The participating states are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. A list of available programs can be obtained from the state coordinator in a student's home state or from the office of the Dean of the Graduate School. There are two requirements: (1) Students must be fully admitted to a degree seeking program that has been approved as an Academic Common Market program (non-degree and conditional students are ineligible); (2) Students must obtain a letter certifying residency from their home state's Academic Common Market coordinator.

Oak Ridge Associated Universities

The University of Memphis is a member of the Council of Sponsoring Institutions of Oak Ridge Associated Universities (ORAU), a not-for-profit consortium of 49

colleges and universities and a management and operating contractor for the U.S. Department of Energy with principal offices located in Oak Ridge, Tennessee.

The ORAU Laboratory Graduate Participation Program enables graduate students in selected disciplines, who have completed all degree requirements excepts thesis or dissertation research, to perform full-time thesis or dissertation research under the joint direction of the major professor and a DOE staff member at a participating site. More information is available from The University of Memphis's representative on the ORAU Council of Sponsoring Institutions, Associate Vice Provost for Research, or by writing University Programs Division P.O. Box 117, Oak Ridge, Tennessee 37831-0117.

Jackson Graduate Center

The University of Memphis Graduate Center in Jackson, Tennessee, is located on the Jackson State Community College campus. Through the Center, students can complete certain degree programs by attending part-time in the afternoons and at night.

The Jackson Graduate Center offers course work leading to master's degrees as well as additional graduate and post-graduate course work. Students at the Center may earn the M.B.A. or the M.S. in Counseling and Personnel Services, Curriculum and Instruction, Educational Administration and Supervision, or Special Education. Selected courses in the Colleges of Arts and Sciences and Communication and Fine Arts are also offered. The Center is part of The University of Memphis's University College.

CECIL C. HUMPHREYS SCHOOL OF LAW

PROGRAM: The Cecil C. Humphreys School of Law offers a program of instruction leading to the degree of Juris Doctor.

Admission to the Cecil C. Humphreys School of Law is on a selective basis. To be eligible for admission, a student must have received a bachelor's degree from an accredited college or university and must have made a satisfactory score on the Law School Admission Test. Questions concerning additional admissions requirements should be directed to the Coordinator of Law Admissions and Recruitment.

The regulations and policies of the School of Law are set out in greater detail in a separate issue of the **Law School Catalog**.

2. ADMISSION TO THE GRADUATE SCHOOL

The Graduate School is open to persons holding the bachelor's or master's degree from accredited colleges and universities whose undergraduate or graduate work has been of sufficient quality and scope to enable them to profitably pursue graduate study. The University of Memphis offers equal educational opportunity to all persons without regard to race, religion, sex, age, creed, color, national origin, or physical handicap.

Applicants will be required to meet admissions criteria established by the Graduate School in order to enroll in graduate courses. In order to be admitted to a degree program in any academic department, students may be required to meet additional standards set by the department or college.

Applications for admission to the Graduate School may be secured from the Graduate Admissions Office.

Deadlines for submitting applications for admission are:

FALL SEMESTER: August 1
SPRING SEMESTER: December 1
SUMMER SESSIONS: May 1

Applications received after these deadlines will be considered only for the next semester. All applications must be accompanied by a five-dollar (\$5.00) non-refundable application fee.

All credentials become the property of the University and will not be forwarded or returned. Credentials will be maintained in active files for a 12 month period after which credentials will be relegated to inactive status and must be submitted again before an admission decision will be made. The applicant is advised to have all credentials on file well in advance (preferably thirty days) of the registration period for the term for which application is made.

Admission to Master's Degree Programs

Graduate Master's

The following Graduate School admissions requirements are minimum standards which identify the *pool* of master's level applicants from which each department selects students to be admitted.

1. *Baccalaureate Degree*

An official transcript showing a bachelor's degree awarded by an accredited college or university with an acceptable grade point average. In addition, transcripts from any other college or university attended may be requested. (Students who received bachelor's degrees from The University of Memphis may disregard this step.) A student must

have graduated with a minimum baccalaureate GPA of 2.00 on a 4.00 point scale.

2. *Entrance Examinations*

An acceptable combination of undergraduate GPA and appropriate test scores.

Graduate Record Examination (GRE): A minimum total score of 1350 in the following computation: baccalaureate GPA X 200 + GRE (verbal plus quantitative). **No GRE score below 750 acceptable, irrespective of GPA.** Applicants to the Department of Music may substitute results of the Revised Music Subject Examination for the score on the quantitative portion of the GRE. The minimum scores for admission remain the same. *Miller Analogies Test (MAT):* A range of MAT scores between 30 to 36 required depending upon GPA. **No MAT score below 30 is acceptable, irrespective of GPA. Scores on MAT exams written in less than 2 month intervals are not acceptable.**

Applicants for the Fogelman College of Business and Economics: All applicants to the College must submit a minimum total score of 1050 in the following computation: baccalaureate GPA (last 60 hours) X 200 + Graduate Management Admissions Test (GMAT). A minimum score of 1000 is required if the overall GPA is used in the computation. **No GMAT score below 430 acceptable, irrespective of GPA.**

3. *Departmental Requirements*

Many departments have higher requirements for admission. Applicants are advised to refer to the appropriate section in this catalog for details.

Master's Conditional

Master's degree program applicants who have an acceptable undergraduate grade point average (**minimum of 2.50**) or an acceptable admissions test score may be eligible for the Master's Conditional classification. Master's Conditional students are not admitted to any degree program, and *may enroll for one semester only for a maximum of nine semester hours of graduate coursework.* After all admission requirements have been met, the Master's Conditional student must reapply for admission to a master's degree program.

Admission to Education Specialist (Ed.S.) Program

The Education Specialist degree is specially designed for the educator

practitioner who desires post-master's training but who does not wish to earn a doctorate. A minimum score of 800 on the GRE (V + Q) or 45 on the MAT is required for admission. **Scores on MAT exams written in less than 2 month intervals are not acceptable.** This program is administered by the College of Education, please refer to the appropriate section of this catalog for a more complete description. Contact the College of Education for additional details.

Students who have not met all admissions requirements may be eligible to be enrolled for one term only. They may continue when all requirements are satisfied. Contact Office of Graduate Admissions for further information.

Admission to Doctoral Degree Programs

Doctoral

The following Graduate School admissions requirements are minimum standards which identify the *pool* of doctoral level applicants from which each department selects students to be admitted.

1. *Baccalaureate or Master's Degree as specified by the program:* An official transcript showing a bachelor's or master's degree, depending on program requirements, with an acceptable grade point average is required. The degree must be awarded by an accredited college or university.

2. *Entrance Examinations:* A minimum total score of 1600 in the following computation: appropriate GPA x 200 + Graduate Record Examination (verbal plus quantitative). **No GRE score below 850 acceptable, irrespective of GPA.**

The Fogelman College of Business and Economics requires a minimum total score of 1200 in the following computation: master's GPA x 200 + Graduate Management Admissions Test (GMAT). **No GMAT score below 480 acceptable, irrespective of GPA.**

3. *Departmental Requirements:* Higher requirements are held by some departments. In addition, some departments may require additional items such as portfolios, proficiency examinations, auditions, etc. Refer to the appropriate departmental description in this catalog for details.

Doctoral Conditional

Doctoral degree program applicants (and Education Specialist applicants) who have an acceptable graduate grade point average or an acceptable admissions test score may be eligible for the Doctoral

Conditional classification. Doctoral Conditional students are not admitted to any degree program and may enroll for *one semester only for a maximum of nine semester hours* of graduate coursework. Some Colleges do not permit conditional status.

Readmissions

Readmission is required if a student is not enrolled for three consecutive terms including the summer sessions. Readmission shifts the student to all rules, prerequisites, and degree requirements listed in the most current *Graduate Catalog*.

Submission of an application for readmission does not insure acceptance. Readmission may be refused or conditions may be imposed on the student making application.

Admission of International Students

The University of Memphis believes that the presence of a balanced representation of international students on campus will enrich the educational environment for all students. The University is authorized under Federal law to enroll non-immigrant alien students on the "F-1" student visa. Applicants must file complete credentials before May 1 for fall admission; September 15 for spring admission; or February 1 for summer admission. Complete credentials include all the documents listed below under requirements. International applicants awarded bachelor's or master's degrees from U.S. institutions and who are residing in the U.S. presently may submit the application for Graduate School up to July 1 for the fall semester, November 1 for the spring semester, and April 1 for the summer session.

The application should be completed carefully and returned to the Office of Admissions, The University of Memphis, Memphis, Tennessee, 38152.

A non-refundable application and processing fee of thirty dollars (\$30.00) is required of every international applicant, unless previously paid. A check or money order, made payable to The University of Memphis, must be sent with the application form.

Applicants will be selected on a competitive basis and, therefore, admission will not be granted to all applicants who meet only the minimum requirements. Priority will be given to applicants with exceptional credentials who will be attending a university in the United States for the first time.

All transcripts, test scores, and other credentials must be accompanied by an official English translation of these documents and must be on file in the Office of Admissions by the stated deadlines.

In addition to admissions requirements described above, international students must supply the following:

1. TOEFL Scores: All applicants who will be attending the university on a student visa and who are not graduates of The University of Memphis must supply a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) or its equivalent, although some units require a higher TOEFL score. Information can be obtained by writing to TOEFL, Educational Testing Service, Princeton, New Jersey, 08540, U.S.A. All test scores must be sent directly from the testing agency to The University of Memphis.

2. Financial Statement: An applicant on an "F-1" student visa must supply, on the form provided by the University, sufficient evidence of financial support for the applicant and all members of his/her family who will accompany the applicant to Memphis. This requires that the applicant certify that his/her intent is to attend the University full-time and that no employment will be required.

3. Photos: Each applicant must provide two recent passport size photos to the Office of Admissions, The University of Memphis.

4. Health Certificate: Each International student, within 30 days from the first day of classes, must submit a certificate from a licensed U.S. physician or other qualified U.S. medical authority verifying freedom from tuberculosis. Failure to do so shall result in denial of enrollment. In the event that a student either has tuberculosis or has potential tuberculosis requiring medical treatment, continued enrollment will be conditioned upon the determination by a licensed U.S. physician that such enrollment does not present a risk to others and upon the student's compliance with any medical treatment program.

5. All international students must purchase health insurance before they are allowed to enroll.

6. International students who wish to apply for readmission to the University must meet the deadlines stated above.

Admission to Non-Degree Status

Combination Senior

An undergraduate senior student with a total cumulative GPA of at least 3.25 who is enrolled in the last term of coursework that will complete the requirements for a bachelor's degree, may request approval to enroll concurrently in undergraduate and selected graduate courses. The Combination Senior student is not considered a graduate student and may take no more than nine departmentally approved graduate semester hours. After the bachelor's degree has been awarded, the student

may apply for admission to The Graduate School.

Graduate Non-Degree

The Graduate Non-Degree classification is for students who wish to enroll in graduate courses but who do not wish to pursue any graduate degree at the university. The Graduate Non-Degree student must have on file at the university an official transcript showing at minimum a bachelor's degree from an accredited college or university and may enroll in selected graduate courses on a space available basis only. Departments may restrict non-degree students to designated courses only. Graduate Non-Degree students who decide to matriculate for a degree must make application to The Graduate School and must meet *all* admissions requirements. **After acceptance into the master's or doctoral program, the student must complete a minimum of 2/3 of the course credits required in that program irrespective of the number of credits completed as a non-degree student.** Some departments count coursework toward a degree only after admission.

Before continuing to register for additional graduate level coursework, the student may be required to sign a waiver agreeing that additional coursework will not apply to degree programs.

Non-degree students must maintain a 3.00 GPA.

Miscellaneous Information

Health Services

Limited medical services are available in the University Health Center. Out-patient medical services, including general clinical evaluation, diagnosis and treatment; laboratory and X-Ray; optometry clinic; family planning; nutrition clinic; and dispensary are available. There is no charge for services and limited prescription drugs are available at a discount.

Entrance Examination Information

a. *Miller Analogies Test (MAT)* — Students who wish to arrange for the MAT should contact the Testing Center, Health Center, Rm. 111, The University of Memphis.

b. *Graduate Record Examination (GRE)* — Registration packets for the GRE may be obtained from the Graduate Admissions Office, and the Testing Center.

c. *Graduate Management Admissions Test (GMAT)* — Registration packets for the GMAT are available in the Graduate Admissions Office, the Graduate Studies Office of the Fogelman College of Business and Economics, and in the Testing Center.

Residency Classification

All determinations concerning the classification of students as in-state or out-of-state for fee purposes are made in the Office of Admissions by the Admissions Adviser for Residency. The determinations are based on the regulations and guidelines of the State Board of Regents. A copy of the guidelines and regulations used in the classification of students for fee-paying purposes may be found on the sample application form at the back of this catalog. If, for any reason, there is a question about a student's residency classification for fee paying purposes, it is his or her responsibility to check with the Admissions Adviser for Residency.

Veterans Services

The Office of Veterans Services as a component of the Student Aid Office provides assistance to eligible veterans and dependents who enroll at The University of Memphis. The Office also provides assistance about a variety of programs and services including Programs of Education and Training, VA Tutorial Services, VA Work study Positions, or VA Educational Loans, as well as counseling and referral for personal, family, career, financial, and educational problems.

Graduate students are also eligible to earn a commission as a second lieutenant in the U.S. Air Force by completing 12 semester hours of the AFROTC advanced program in conjunction with their graduate school studies. Applications are accepted during January and February for Fall semester entries.

Graduate students are also eligible to earn a commission as a second lieutenant in the U.S. Army by completing 16 semester hours of the ROTC advanced program in conjunction with their graduate school studies.

ACADEMIC REGULATIONS

Graduate and prospective graduate students are expected to become thoroughly familiar with the rules, regulations, and degree requirements of the Graduate School and of the academic departments.

Appeals: A student has the right to appeal decisions made by University officials in the implementation of University policy. If a student feels that individual circumstances warrant an appeal, the request for appeal must be filed in the University office responsible for the administration of that policy or the office specified in the policy statement.

Course Numbering System

Only students fully or conditionally admitted to the Graduate School may enroll

in and receive graduate credit for courses numbered according to the following system:

- 5000-5999—Graduate courses designed for *personal/professional development*, not applicable to degree programs.
- 6000-6999—Courses equivalent to 4000 level senior courses for which a limited amount of graduate credit may be earned. Students will be expected to do more work and/or to perform at a higher level to receive graduate credit.*
- 7000-7999—Courses open to graduate students
- 8000-8999—Courses open primarily to doctoral students
- 9000—Dissertation

*Students may not receive credit for a 6000 level course if they have credit at the 4000 level.

Course Load Limitations

Fifteen semester hours of graduate coursework shall be the maximum load for students devoting full time to graduate study during regular sessions. The maximum number of hours of graduate course work for which a graduate student may enroll during the Summer Session is 12.

Those who register for 9 or more hours will be considered full-time students. University funded graduate assistants must register for no less than 12 semester hours in the fall and spring terms.

Requests for overloads must be approved by the director of graduate studies in the student's college. For students in School of Audiology and Speech-Language Pathology, approvals must be issued by the graduate coordinator.

Change of Major

Students who have previously declared a major area of study but desire to make a change should apply to the Graduate Office to begin the process for a change of major. A change of major is considered the equivalent of reapplying for admission. All admission requirements of the new major must be satisfied before a change can be granted.

Adding and Dropping Courses

Withdrawal from Graduate School

Courses may be added or dropped after registration for a limited period of time *only*. Refer to the University Calendar for specified dates. Courses may be added late only upon approval of the instructor

and the College Director of Graduate Studies.

A graduate student may withdraw from the University or drop a course after the drop date *only when circumstances beyond the student's control makes it impossible to complete the semester*. Late withdrawals and late drops must be approved by the college director of graduate studies.

Attendance

Requirements for attendance in any graduate course will be determined by the instructor, and must be communicated in writing to students in the first class meeting of the term.

Grading System

Grades

The grades which may be awarded are as follows: A-B-C-D-F. Symbols used to postpone or suspend grading include I (incomplete), IP (in progress), DP (drop), and W (withdrawn).

The grades for many 5000 courses, student teaching, workshops, practica, internships, theses, and dissertations (designated in the listing of courses with †) shall be "S," "U," or "IP" (in progress). No 5000 course may be applied to a degree program.

Incomplete

The symbol "I" (incomplete) may be assigned by the instructor in any course in which the student is unable to complete the work due to extraordinary events beyond the individual's control. The "I" may not be used to extend the term for students who complete the course with an unsatisfactory grade. Unless the student completes the requirements for removal of the "I" within 90 days from the end of the semester or summer term in which it was received (see University Calendar), the "I" will be changed to an "F," regardless of whether or not the student is enrolled. Extensions of 45 days may be granted by the instructor if sufficient extenuating circumstances exist. At the end of the 45 day extension period, the "I" symbol will automatically revert to an "F". The student will be certified for graduation when all requirements are met, including the removal of all "I" symbols. For students who have an "I" in the semester in which they expect to graduate, the certification process will automatically be deferred to the next term.

In Progress

Instructors of research courses may record a symbol for "work in progress" (IP) to extend the time required for the completion of such research. A final grade of S or U is filed upon completion of the project.

Grade Point Average

The Grade Point Average (GPA) for graduate students is computed on ALL graduate courses completed within the specified time period for the degree. Graduate students must maintain a 3.00 GPA ("B"). A grade below "C" will not apply toward any graduate degree, but will be computed in the GPA. No more than 7 hours of "C" will be applied towards meeting degree requirements. Grades earned at another university will not be computed in the cumulative GPA. Grades in courses which are older than the time limitation for degree (6 years for master's 10 years for doctoral) will be shown on the transcript but will not be included in the computation of the GPA.

Repetition of Courses

A graduate student may repeat a course in which a grade lower than "B" was earned. A student may not attempt the same course more than twice for the purpose of obtaining a passing grade or a higher grade. The grade in the second attempt will replace the grade in the first attempt. A maximum of two courses may be repeated for a grade change.

Grade Changes

Grades properly issued in a course by the faculty member of record *will not be altered* except when an error was made in computation or reporting or as a result of a formal grade appeal.

Academic Misconduct

Graduate students at The University of Memphis are expected to observe the regulations and policies that govern the behavior of students as members of this academic community. These regulations and policies are published in the *Student Handbook*. In particular, graduate students should become familiar with the university's policies on plagiarism in its various forms. Additionally, term papers may not be used to meet the requirements of more than one course unless approved in advance by both instructors.

Violations of academic misconduct are administered by the academic discipline committee, a university standing committee appointed by the president.

Academic Probation

A graduate student whose cumulative grade point average drops below 3.00 will be placed on probation. Two consecutive semesters on probation can result in suspension. Conditions under which continuation in the graduate school will be granted must be recommended by the department and approved by the Dean of the Graduate School. If, in the opinion of the Graduate Dean and the academic

department, the student is not making satisfactory progress toward degree completion, the student will be dismissed from the degree program.

Graduate Faculty

The designation "Graduate Faculty" is bestowed by the University upon faculty following review of their credentials and recommendation by their colleagues. The graduate faculty support graduate programs by chairing and serving on graduate student committees, planning and designing graduate instructional program, supervising graduate student research, participating in the design and review of policies governing graduate affairs, and discharging other duties critical to maintaining a functional graduate school.

The University of Memphis maintains two levels of graduate faculty, full and associate. Applicants for graduate faculty status must show evidence of scholarly production. Only full graduate faculty members may chair doctoral committees. The chairs of master's committees may be filled by full or associate graduate faculty. A listing of graduate faculty with periods of appointment may be found in the back of this catalog. Contact the Graduate School for additional information.

Privacy Rights of Parents and Students

The Family Educational Rights and Privacy Act of 1974, with which the University intends to comply fully, is designed to protect the privacy of educational records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with The Family Educational Rights and Privacy Act Office (FERPA) concerning alleged failures by the institution to comply with the Act.

The provisions for the release of information about students and the rights of students and others to have access to The University of Memphis education records are published in their entirety each semester in the *Schedule of Classes*.

Audit Courses

Students who are registered for one or more classes at The University of Memphis may also register to audit one course with the approval of the chair of the department in which the course is offered.

Persons who are not enrolled for credit courses may register for a maximum of three audit courses with the approval of the Dean of Admissions and Records and the department chairman.

Audit will be posted on a student's transcript only if at the time of evaluation the faculty member judges that the student has attended enough classes to earn the audit notation. The requirements for attendance should be made known to the student at the beginning of the term.

A student may not change from a grade point basis to audit or from audit to a grade point basis after the last day to add classes for that term.

Fees for audits will be assessed on the same basis as fees for credit courses.

Credit by Examination

The departments, with approval from the Dean of Graduate Studies, may offer graduate courses for credit by examination provided that total credit by examination applied to a student's degree program does not exceed six (6) semester hours.

The following regulations govern the granting of credit by examination:

1. A student enrolled in a degree program — full-time or part-time — who is in good academic standing may make application to take an examination for credit.

2. Permission to take credit by examination must be obtained from the major adviser, department chairman, and the college director of graduate studies. When this permission is granted, and after payment is made for the cost of the examination, the Dean of Graduate Studies will issue the official permit for the examination. When the department chairman returns the completed form to the Graduate Office, the Dean will authorize the posting of the credit to the student's record.

3. The form of the examination, the method of administering it, and the time of examination are left to the discretion of colleges and departments.

4. To receive credit, the student's examination grade should be a grade equivalent of at least a "B." Credit is indicated on the student's record as "Cr."

Course Validations

The University sets time limits on students as a device to insure that they have reasonably current knowledge in those courses which comprise the graduate program and for which a graduate degree is awarded. When the university coursework is too old to be included in a graduate program (6 years for masters, 10 years for doctoral) the department may allow the student access to validation procedures subject to the following regulations:

1. Only students fully admitted to graduate programs and who are in good standing are eligible.

2. Not more than one-third of the total credits in the program may be validated.

3. Only courses with fixed content are eligible for validation. (Independent study,

research, special topics courses are ineligible).

4. Validated courses will be graded S or U with a satisfactory grade given for B or better performance. Graded exams must be filed in the Office of the Graduate Dean or the dean of the college in which the course is offered.

For additional information about course validation procedures, contact the Graduate School Office.

Transfer Credit

There is no automatic transfer of credit toward a graduate degree, but, in general, graduate work completed at another institution accredited at the graduate level may be accepted in a graduate degree program at the university, provided these courses (1) have not been used for a previous graduate degree, (2) relate to the content of the graduate program and/or are comparable to those offered at the university, and (3) do not exceed time limitations set for master's and doctoral programs. Credit earned at another institution must be presented for evaluation no later than the student's application for degree candidacy. Forms are available in the Graduate Office (315 Administration Building).

Approved transfer credit may be accepted for *not more than 6 semester hours* of course credit toward a master's or Ed.S. degree (for exceptions, see the departments of Art and Geography and Planning). Credit will be transferred to apply toward a doctoral program upon approval of the student's departmental advisory committee, *however, the last thirty semester hours of credit for the doctoral degree must be earned at The University of Memphis.*

Courses must meet (1) the Tennessee Board of Regents requirement of a minimum of 750 contact minutes for each semester credit (2250 for a 3 hour course) and (2) The Tennessee Conference of Graduate School policy of a minimum of 3 hours of classwork per week for 3 hours of credit.

Grades earned at another institution will not be computed in the university cumulative grade point average, nor will they be accepted for transfer unless they are "B" or better. No credit will be transferred unless it meets with the approval of the major adviser. Graduate credit is never granted for courses taken by correspondence.

Appeals Procedures

Grade Appeals

This appeal procedure is designed to provide any graduate student at The University of Memphis with a clearly defined avenue for appealing the assignment of a course grade which is believed to be based on prejudice, discrimination, arbi-

trary or capricious action, or other reasons not related to academic performance. In all cases the complaining student shall have the burden of proof with respect to the allegations in the complaint and in the request for a hearing. If any party fails to pursue any step of the procedure within the prescribed time frame, the disposition of the student's complaint made in the previous step shall be final. Copies of all correspondence and records will be retained in the office in which the complaint is finally resolved. The original documents will be forwarded to the Graduate Office for filing.

Step 1 The student shall first consult with the instructor in an effort to provide a satisfactory resolution of the complaint. In the event the student cannot schedule a meeting with the instructor, he or she may contact the department chair who will schedule the meeting between the student and the instructor. If for any reason the instructor is not available, proceed to Step 2. If agreement is reached between the student and instructor, the appeal process ends.

Step 2 If the complaint is not resolved in Step 1, the student must complete a Graduate Student Grade Appeal Form (available in the Graduate Office, Administration Building, Room 315). This form will be sent to the chair of the department by the Graduate Office. Next, the student must present a written statement detailing the factual basis of the complaint to the chair of the department in which the course was taken. The written complaint must be received by the chair within forty-five days from the end of the term in which the contested grade was received. The department chair will then attempt to resolve the complaint in consultation with the instructor and the student within a *fifteen-day period* dating from the written complaint. The department chair may, at his or her discretion, counsel with the faculty of the department.

If the department chair was the instructor of the course involved in the complaint, the written complaint of the student shall be submitted to the dean of the college.

The student's grade may be changed in Step 2 of the appeal procedure by the written consent of the instructor and the student.

Step 3 If the complaint cannot be resolved at the level of Step 2 within the prescribed fifteen-day time period, the student, within *five days* following the end of such period, may request in writing that the chair forward the complaint to the dean of the college. The chair will provide the dean with a copy of all correspondence, the Graduate Student Appeal Form, and other records pertaining to the complaint.

The dean may utilize any resources available to resolve the grade conflict

within a *fifteen-day period*. If the dean and chair are in agreement that the grade should be changed, either raised or lowered, the dean shall be empowered to change the grade without the instructor's consent. Otherwise the grade shall remain as recorded.

Either the student or the instructor may appeal the decision made under Step 3 within *five days* by filing with the Graduate Dean a written request for a hearing before the Graduate Grade Appeals Committee.*

Step 4 The written request for a hearing before the Graduate Grade Appeals Committee should state the factual basis for the appeal of the dean's decision. If the Committee finds the student's or the instructor's request merits a hearing, the Committee shall notify the student, the instructor, the chair, and the college dean of the date, time, and the location of the hearing. If the Committee finds that the request does not merit a hearing, the student or the instructor shall be so notified.

The Graduate Grade Appeals Committee may utilize any available resources to resolve the conflict within a *fifteen-day period*. If the Committee is in agreement that the grade should be changed, either raised or lowered, the Committee shall be empowered to change the grade without the consent of the instructor. Otherwise, the grade shall remain as recorded. The decision of the Committee will be communicated to all parties in writing. **The decision of the Graduate Grade Appeals Committee will be final.**

The appeals procedure is not complete until all appropriate records are forwarded to the Graduate Office. At this time, the Graduate Dean will notify the Record's Office of any grade change. A copy of the Graduate Student Grade Appeals Form will become a part of the student's file. A permanent record of all grade appeals reviewed by the Grade Appeals Committee shall be maintained in the Office of Graduate Studies.

***The Graduate Grade Appeals Committee shall be composed of seven members and seven alternates constituted as follows:**

A chair designated by the provost and selected from the graduate faculty, a graduate faculty member and alternate designated by the Dean of Graduate Studies, and two graduate faculty members and two alternates elected by the University Council for Graduate Studies and Research. Three students and three alternates selected through the Graduate Student Association.

NOTE: The summer semesters are considered as one term for grade appeal purposes; i.e., the period for appealing is 45 days from the end of the last summer term.

Retention Appeals

Appeals are to be presented and hearings on appeals convened only during periods in which the academic units of the University are in session. Time limitations will be extended to accommodate this requirement.

All parties concerned must receive copies of:

1. The requests for a hearing.
2. Notices of the time and location of the hearing.

3. The disposition of the hearing received in each step of the appeal procedure.

As soon as notice is received that the appeal is continuing, copies of all correspondence and other records pertaining to the complaint must be provided the individual responsible for continuing the appeal by the responsible individual in the preceding step.

Step 1

A. The student must submit a written request to the department chair for a hearing to appeal termination from the program. The request should state the factual basis for the appeal.

Time Limitation: Forty-five days from the end of the term during which the termination was received.

B. In consultation with the student and appropriate departmental committee, the department chair will render a decision on the appeal. The student and departmental committee will be notified in writing of the department chair's decision and reasons supporting the decision.

Time Limitation: Fifteen days following the receipt of the complaint.

Step 2*

A. The student, or the departmental committee may appeal the decision made in Step 1 by filing, with the college director of graduate studies, a written request for a hearing before the college council for graduate studies. The request should state the factual basis for the appeal of the chair's decision.

Time Limitation: Five days following the announcement of the decision by the chair.

B. The college council will notify the student, departmental committee and chair of the date, time and location of the retention appeals hearing. If the college council is in agreement that the student should be reinstated, the council shall be empowered to reinstate the student. The student, departmental committee and chair will be notified in writing of the college council's decision and reasons supporting the decision.

Time Limitation: Fifteen days following the receipt of the written request.

***In the case of free-standing departments that are not represented on a college council, Step 2 will be omitted and the appeal will be forwarded to the individual functioning as dean of the unit involved.**

Step 3

A. If the complaint cannot be resolved at the level of Step 2, the student, or the departmental committee may request in writing that the college director of graduate studies forward the complaint to the dean of the college.

Time Limitation: Five days after the announcement of the decision by the college council.

B. The college dean may utilize any resources available to resolve the conflict. The chair, college director of graduate studies, departmental committee, and student will be notified in writing of the dean's decision.

Time Limitation: Fifteen days following the written request for appeal.

Step 4

A. If the complaint cannot be resolved at the level of Step 3, the student or the departmental committee may appeal the decision by filing with the graduate dean a request for a hearing before the University Council for Graduate Studies and Research. The written request for a hearing must state the factual basis for the appeal.

Time Limitation: Five days following the announcement of a decision by the college dean.

B. If the University Council for Graduate Studies and Research finds that the appeal does not merit a hearing, all concerned parties shall be notified by the graduate dean.

C. If the University Council for Graduate Studies and Research finds that the appeal merits a hearing, it will notify the college dean, college director of graduate studies, department chair, departmental committee, and student of the date, time, and location of the retention appeals hearing. Any available resources may be used by the University Council to resolve the conflict. If the University Council is in agreement that the student should be reinstated, it shall be empowered to reinstate the student. The graduate dean will notify in writing all concerned parties and student of the decision and reasons supporting the decision.

Time Limitation: Fifteen days following the receipt of the written appeal.

The decision of the University Council for Graduate Studies and Research is FINAL.

Expiration of Catalog

The degree requirements published in the *Graduate School Catalog* of The University of Memphis *Bulletin* are valid for seven years from the beginning of the academic year to which the catalog applies. A student may complete the degree under the provisions of any valid university catalog provided the effective date of that catalog is not earlier than the student's initial graduate admission to the univer-

sity or some other accredited institution of higher learning. (This issue of the catalog is valid until fall of 2001.)

NOTE: Although the requirements for a degree program may be effective for several years, there are other time limitations which relate to the completion of specific degrees within specific time periods. See Time Limitations sections for master's and postmaster's degrees in the following portions of this chapter.

MINIMUM DEGREE REQUIREMENTS

Graduate Academic Programs

Graduate students are expected to be aware of and to comply with the general requirements for the degrees they are pursuing as outlined in the *Graduate School Catalog*. In addition to the general requirements, students are expected to conform to any additional requirements set by the student's college or department.

A wide variety of graduate programs of study are offered in The Graduate School at The University of Memphis. Candidates for a degree must design a plan which has the approval of their major adviser, the department chair, and the Graduate Dean.

The University of Memphis offers Master's degrees, Education Specialist degrees, and Doctoral degrees. The Master's programs are: Master of Arts (M.A.), Master of Science (M.S.), Master of Arts in Teaching (M.A.T.), Master of Business Administration (M.B.A.), Master of City and Regional Planning (M.C.R.P.), Master of Education (M.Ed.), Master of Fine Arts (M.F.A.), Master of Music (M.Mu.), Master of Health Administration (M.H.A.), and Master of Public Administration (M.P.A.). In addition, the degrees of Education Specialist (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Musical Arts (D.M.A.) are offered. The Doctor of Philosophy (Ph.D.) is awarded in Audiology and Speech Pathology, Biology, Business Administration, Chemistry, Counseling Psychology, Engineering, Geophysics, History, Mathematics, Music, Philosophy and Psychology.

Foreign Language Proficiency

A reading knowledge of at least one foreign language is required in several graduate programs. This requirement may be met in one of three ways: (1) achieving a score on the Graduate School Foreign Language Test (GSFLT) acceptable to the department granting the degree; (2) achieving a grade of "B" or better in designated courses; or (3) demonstrating a reading knowledge of a foreign language

at a level acceptable to either the Coordinator of Graduate Studies or the chair of the Department of Foreign Languages and Literatures. For additional information consult the department directly.

Minimum Requirements for Master's Degree

Courses Requirements

The Master's degree program shall generally include 30-36 semester hours of course work. Additional requirements for the Master of Fine Arts in Theatre, the Master of Fine Arts in Studio Art, the Master of Public Administration, the Master of Arts in Teaching, the Master of Science in Rehabilitation Counseling, and the Master of City and Regional Planning can be found in the appropriate department listings. The student's program must be approved by the major department.

A minimum of 70% of the total required hours must be provided by 7000 level courses.

No more than 9 hours of workshop courses and independent study courses may be applied to a Master's degree.

Admission to Candidacy

Before an applicant will be officially admitted to candidacy for a master's degree, the student must have satisfied the following requirements:

1. The "Application for Admission to Candidacy for the Master's Degree" and an "Intent to Graduate Card" must be filed by the deadline published in the *Graduate School Catalog* and in the *Schedule of Classes* and posted on department bulletin boards on campus. *There will be no exceptions made if candidacy forms are not submitted by the stated deadlines.*

2. The student must have at least a "B" average on all coursework listed on the candidacy forms as well as any other graduate work undertaken at The University of Memphis within the specified time limit (6 years). Grades of "D" or "F" are not accepted for any graduate degree credit but these grades will be computed in the GPA. No more than seven (7) hours of "C" will be counted toward degree requirements.

3. Grades made the final semester may not be used to correct GPA deficiencies. The student must have at least a "B" average in all graduate work at the time the Intent to Graduate Card is filed.

4. The program must include a minimum of 70% of the total required hours as 7000 level courses.

5. All requirements of the Graduate School, the student's college, and the department must be met.

6. The student's graduate work up to this point must be acceptable in quality and quantity to the major adviser, depart-

ment chair and/or director of graduate studies and the Dean of the Graduate School.

It will be the responsibility of each graduate student to notify the Graduate Office of any changes in name or address. Students who are graduating will receive a letter explaining graduation ceremony requirements about one month prior to graduation.

Thesis Requirements

Most departments provide students both a thesis and a non-thesis option (see department descriptions).

A thesis of 3 to 6 semester hours may be presented as partial completion of degree requirements. Students must enroll for thesis credit each term university facilities are used for the thesis project.

In preparing the thesis manuscript, students must follow the Tennessee Conference of Graduate Schools (TCGS) *Guide to the Preparation of Theses and Dissertations*, available in the University Store.

Every student who writes a thesis must successfully defend it in an oral exam administered by the student's committee composed of 3 members of the graduate faculty.

The final draft of the thesis must be acceptable to all members of the student's committee and recommended to the Graduate Dean for final acceptance. A copy of that final draft must be submitted to the Graduate School after the successful defense.

Three copies of the master's thesis are required by the Graduate School, and the student should consult with the department chair and/or thesis adviser as to the number of additional copies required.

Thesis Credit

A student who fails to complete the thesis after having registered for the maximum degree credit allowable must continue active thesis status by registering for thesis credit. See individual departments for specific requirements. This renewal of active status must be continued each academic semester until the thesis is completed. Registration in the extended term of summer school will fulfill the requirement for the summer. Credit will be posted upon completion and acceptance of the thesis, but no more than 6 hours will be allowed for a Master's thesis, even though the student may have been required to register for additional hours in order to remain in active status.

This policy also applies to the three hour capstone project (PLAN 7986) required for the Master of City and Regional Planning (MCRP) degree.

If a student elects not to complete the thesis, a retroactive drop (or withdrawal) must be processed for the last term of enroll-

ment in thesis credit to reflect the change of program on the student's transcript.

Comprehensive Examination

Before being recommended for graduation, every candidate for the Master's degree is required to pass a final comprehensive examination. The comprehensive should be administered only to students in good standing in the last term of coursework. It may be oral or written or both, at the discretion of the department and the result of the exam communicated to the Graduate School.

It is the student's responsibility to confer with the appropriate department regarding the time and place of the examination.

A student who does not perform satisfactorily on the first comprehensive examination will be given an opportunity to retake the examination at the next regularly scheduled examination period. The department will recommend appropriate coursework which the student may elect to take in preparation for retaking the exam.

If the student's performance is unsatisfactory on the second examination, the student will be dropped from the program.

Defense of Thesis

Upon completion of the thesis, the student must successfully complete an oral defense as determined by a unanimous vote of the student's committee. (If the oral exam encompasses both the comprehensive and the defense, the results should be reported separately on the forms provided.) The defense is administered by the student's three-person committee.

Time Limitation

All requirements for the degree must be completed in six calendar years. Courses more than six years old will not be allowed as credit toward the master's degree. *There are no exceptions to this policy.* However, students may request the option of validating old courses as described in the previous section of the catalog.

Grades earned in courses which are older than six years will be shown on the transcript but will not be included in the computation of the GPA.

Second Master's Degree

Students who hold a master's degree from The University of Memphis may pursue a second master's degree with a different major or degree if they are accepted by a department. No more than six (6) semester hours of the first degree may be applied toward the second degree. The department with which a student is studying will determine whether any credit from the former degree will be accepted toward the second degree. Any credit accepted toward the second degree must

be within the regular time limit requirements for the master's degree.

Education Specialist

The Education Specialist degree is specially designed for the educator-practitioner who desires post-master's training but who does not wish to earn a doctorate. For additional information, please refer to the College of Education section of this catalog.

Minimum Requirements for Doctoral Degrees

Course Requirements

Course requirements for the doctoral degree vary with the department; see the appropriate section in this catalog. The student's program must be approved by the major department. The last thirty hours of credit must be earned at the University.

Time Limitation

No credit earned more than ten calendar years prior to the student's expected date of completion of the Doctoral Degree will be applied toward meeting course requirements for the doctoral degree.

There will be no exceptions to this policy. However, students may request the option of validating old courses as described in the *Academic Regulations* of this catalog. Grades earned in courses which are older than 10 years will be shown on the transcript but will not be included in the computation of the GPA.

Residency Requirement

The purpose of the residency requirement is to provide doctoral students with significant time for sustained participation with peers and faculty members in scholarly and creative activities. Residency is expected to be a vehicle for socialization into the shared community of professional life.

The student must commit to full-time study for a minimum of two successive semesters after admission to the degree program to fulfill the residency requirement. Some departments do not count the summer term towards residency. The College of Education has an alternative residency program; contact the College for additional information.

Qualifying Examination

Each person seeking a doctoral degree may be required to take a qualifying examination administered by the department in which the student wishes to major. The examination may cover specialized and general knowledge of the major area as well as writing skill. The results of the qualifying exam should be used, in part, to plan the academic program. To be

eligible to take this qualifying examination, the student must be fully admitted to the Graduate School. Departments may hold additional requirements.

Advisory Committee

After admission to the doctoral program, the student should consult with the department chair and/or graduate coordinator to secure the appointment of a major adviser, who is a full member of the Graduate Faculty, to serve as chair of the student's Advisory Committee. The department chair, following consultation with the student and major adviser, will approve the appointment of a minimum of three members to the Advisory Committee. These appointments will be forwarded to the Dean of the Graduate School.

Comprehensive Examination

After the student has completed all coursework required for the doctoral degree, or is enrolled in the last course of the program of studies, exclusive of the dissertation and is in good standing, the student must pass a comprehensive examination acceptable to the Advisory Committee (only one dissenting vote is allowed), written and oral, covering the major and collateral fields of study. A student who successfully passes the comprehensive exam and has submitted an approved Program of Studies is eligible to begin work on a dissertation. A doctoral student who does not perform satisfactorily on the first comprehensive examination will be given an opportunity to retake it at the next regularly scheduled examination period. The examining committee will recommend appropriate remedial action which the student will follow in preparation for retaking the exam. Doctoral students will be dismissed from the program if they fail to pass the examination in two attempts.

Dissertation

An acceptable dissertation is a requirement for all doctoral degrees. The dissertation must represent a significant scholarly effort which culminates in an original contribution to the field of inquiry. It should reflect the candidate's ability to conduct independent research and interpret in a logical manner the facts and phenomena revealed by the research.

The dissertation is written under the supervision of a dissertation committee (minimum of three members), made up of graduate faculty, and approved by the department chair and/or college director. The chair of the dissertation committee must hold full graduate faculty status. The dissertation must meet the specific regulations of the department in which the student is majoring and the Graduate School. Consult the publication entitled *TCGS Guide to the Preparation of Theses and Dissertations*, available in the University Store.

In order to remain in active status, candidates must register for dissertation credit each academic semester until the dissertation is completed. (The summer term will be considered an academic semester for this purpose.) Credit will be posted upon the completion and acceptance of the dissertation. No more than the total number of semester hours for dissertation required by the department will be counted towards the degree, even though the students may have registered for additional hours in order to remain in active status.

The final draft must be approved by the members of the Dissertation Committee and by the Graduate Dean. This final draft of the dissertation must be submitted to the Graduate School after the defense.

A minimum of three and a maximum of five copies of the dissertation must be submitted for binding. The dissertation, which will be microfilmed, must be accompanied by an unnumbered abstract of not more than 350 words. The abstract will be published. Fees to cover the cost of microfilming and publishing are specified elsewhere and are to be paid by the student.

Admission to Candidacy

Before an applicant will be officially admitted to candidacy for a doctoral degree, the student must have satisfied the following requirements:

1. The "Application for Admission to Doctoral Candidacy" and an "Intent to Graduate Card" must be filed by the deadline published in the *Graduate School Catalog* and in the *Schedule of Classes*, and posted on department bulletin boards on campus. *There will be no exceptions made if candidacy forms are not submitted by the stated deadlines.*

2. The student must have at least a "B" average on all coursework listed on the candidacy forms as well as any other graduate work undertaken at The University of Memphis within the specified time limit (10 years). Grades of "D" or "F" are not accepted for any graduate degree credit but these grades will be computed in the GPA. No more than seven (7) hours of "C" will be counted toward degree requirements.

3. Grades made the final semester may not be used to correct GPA deficiencies. The student must have at least a "B" average in all graduate work at the time the Intent to Graduate Card is filed.

4. All coursework offered for the doctoral degree must have been completed within a 10 year time frame.

5. The student's entire program, including the dissertation, must be acceptable to the dissertation committee, department chair, and/or director of graduate studies, and the Dean of the Graduate School.

It will be the responsibility of each graduate student to notify the Graduate School

Office of any changes in name or address. Students who are graduating will receive a letter explaining graduation ceremony requirements about one month prior to graduation.

Defense of Dissertation

After the completion of the dissertation and all other prescribed work for the degree, candidates will be given a final oral examination dealing primarily with the dissertation and its relation to the candidate's major field of study. This exam will be conducted by the student's dissertation advisory committee. All members must be present at the examination. If the student's performance on this examination is satisfactory as judged by the committee, with no more than one dissenting vote, all requirements for the degree will have been completed.

GRADUATE ASSISTANTSHIPS

Graduate teaching and research assistantships are available in most of the academic areas of The University of Memphis. Full-time assistants may anticipate \$4,500–\$15,000 in salary based on 20 hours of service per week. Graduate assistants who work at least 10 hours per week are classified as in-state students for fee paying purposes for the term of their appointment as graduate assistants. University supported graduate assistants are expected to carry a 12 credit hour load every semester. Tuition and fees of graduate assistants are paid by the University. Nonresident assistants appointed for the preceding spring semester are eligible for in-state fees for summer, whether or not the student holds an assistantship in that summer term.

GRADUATE FELLOWSHIPS

Graduate student fellowship information can be obtained in The Graduate School, 315 Administration Building.

The **Van Vleet Memorial Fellowship** (\$10,000 plus fee waiver) established by Mrs. Harriet S. Van Vleet in honor of her late husband, McKay Van Vleet, is awarded annually to students enrolled in a graduate program leading to the Ph.D. in designated science areas.

The **University of Memphis Society, Inc. Graduate Fellowship**, established by UMS, Inc., annually awards a fellowship to a full time doctoral student based on exceptional academic achievement.

The **Zonta Club of Memphis, Inc.** annually presents an award equivalent to full in-state tuition to a worthy graduate student, preferably a woman, based upon academic achievement and leadership skills.

The **Part-time Graduate Fellowship** is awarded to fifteen students (three from each of the five colleges) enrolled in at least three and no more than eight hours a semester. The stipend is \$150 per semester and renewable up to five times.

The **Tennessee Board of Regents Graduate Minority Fellowship** is available to residents of Tennessee in selected disciplines. Selection is based on grade point average, entrance examination scores and leadership/extracurricular activities. The fellowship provides tuition and fees and a stipend equal to departmental assistantship stipends.

Applications for the following fellowships should be submitted to the Unit listed:

THE FOGELMAN COLLEGE OF BUSINESS AND ECONOMICS

The **Dr. G. P. Racz Leadership Fellowship** in the amount of \$150 is awarded each semester to a full-time graduate student majoring in accounting. The recipient must exhibit outstanding leadership skills.

The **R. B. Sweeney Graduate Fellowship** in the amount of \$1,000 is awarded annually to a graduate master's student majoring in accounting. The recipient must have an undergraduate degree in accounting, and must have an undergraduate GPA of at least 3.50 or a GMAT score of at least 600.

The **Albert F. Wernet Memorial Fellowship in Finance** in the amount of \$5,000 is awarded annually to a doctoral student majoring in finance.

THE COLLEGE OF COMMUNICATIONS AND FINE ARTS

The **Olin F. Morris Fellowship** in the amount of \$15,000 is awarded to a graduate student majoring in journalism with an interest in broadcast management.

THE COLLEGE OF EDUCATION

The **Dr. R. Eugene Smith Fellowship** equivalent to in-state tuition is awarded annually to a graduate student pursuing studies in higher education administration.

THE DEPARTMENT OF AUDIOLOGY AND SPEECH PATHOLOGY

The **AUSP Alumni Chapter Fellowship** is awarded each spring semester to a graduate student in Audiology and Speech Pathology. The recipient must demonstrate outstanding clinical skills and support of student and departmental activities.

The **Marion G. Evans/Exchange Club of East Memphis Fellowship** is awarded annually to graduate students training to work with the hearing impaired.

THE HERFF COLLEGE OF ENGINEERING

The **Herff Engineering Fellowship** is a \$8,500, one year, non-renewable award for graduate students in Engineering.

The **Herff Engineering Doctoral Fellowship** is a \$15,000 per year, three year award for graduate students in Engineering pursuing a Ph.D. degree in which the research emphasis is in an area related to Biomedical Engineering.

GRADUATE STUDENT ASSOCIATION

The Graduate Student Association represents all graduate level students enrolled in the university. The purpose of the organization is to serve the unique needs of the students engaged in graduate studies. Business is conducted by the executive board and the Graduate Student Council. Each department serving graduate students within the various colleges selects a representative to serve on the council. A student is selected by the organization to serve as a representative to the University Council for Graduate Studies and Research. The elected president holds a graduate assistantship in the graduate dean's office. Activities include a new student orientation, teaching workshops, special speakers and events, and an annual graduate student research forum. The GSA also awards grants to support graduate students who present original work at professional conferences.

3. EXPENSES

FEES AND CHARGES

GENERAL: The information in this section concerning tuition, fees, deposits, etc. is applicable only to students enrolled in The Graduate School. Similar information for students in the undergraduate colleges and The School of Law is available in the catalogs of those schools.

The listing of any fee or incidental charge in this catalog does not constitute a contract between the University and the student. The fee amounts listed below are for the 1993-94 academic year. Fees are expected to increase somewhat for the 1994-95 academic year. **Because of rapidly changing conditions it may become necessary to alter a fee structure before the next edition of the Catalog is published.** As a condition of registration, each student will pay the fees in effect the semester for which he or she registers.

All fees and charges will be assessed and calculated consistent with policies and procedures of the University and the Tennessee Board of Regents. Information presented in this *Catalog* is intended to cover the situations most students will encounter. The University may have additional policies and procedures by which fees and charges are implemented or which apply to unusual situations.

INDEBTEDNESS TO UNIVERSITY: Policy of the Tennessee Board of Regents prohibits the enrollment of any person who owes the University any amount of money. All outstanding financial obligations to the University must be satisfied before the first day of classes to avoid deletion of the student from the class rolls. Tennessee law prohibits the release of grades, transcripts or diplomas of any person who has outstanding financial obligations to the University.

APPLICATION AND REGISTRATION FEE INFORMATION

APPLICATION FEE: Each student submitting an application for admission to the Graduate School must pay, at the time of submitting their first application, a one-time non-refundable fee of \$5.00.

PAYMENT OF FEES AND DEBTS: Fees may be paid by cash, check, money order, Visa/MasterCard, Discover, or through use of a University Tiger Fund\$ Account. Fees may be paid as soon as the student receives a Class Schedule and Invoice Form. However, all fees must be paid by the deadline indicated on the

Student's Class Schedule and Invoice Form. All deadlines are noted in the Fee Deadline section and Term Calendar of the *Schedule of Classes*. Registration is not complete and students will not have their names placed on class rolls until after all fees are satisfied. Student aid awards, scholarships, and billing authorizations are NOT automatically processed. The student must process them through the registration cashiers to satisfy fees.

MAINTENANCE FEE: All students whether in-state or out-of-state, pay a maintenance fee. Graduate fees are \$103.00 per semester hour, not to exceed a maximum of \$1,061.00. Maintenance fees assessed are based on the course level and the maximum fees will be the graduate maximum if a student is enrolled for any graduate hours.

Undergraduate maintenance fees are \$73.00 per credit hour.

Fees for auditing courses are assessed on the same basis as fees for credit courses. Courses offered between terms, for concentrated periods during a term, or at specific locations, may be subject to fees on a per-hour basis only.

The University will usually collect the amount of fees due at the time of registration, and during the adding and dropping of classes, in accordance with the residency classification and fee rates in effect. After all enrollments are complete any over-collections will be refunded, and students will be billed for under-collections.

THE SUMMER SESSION: The Summer Session consists of two separate terms of approximately six weeks each, plus extended terms for specified courses. Fees for the Summer Session are determined solely on a semester hour basis. The semester hour charge is \$103.00 for graduate courses for maintenance fees and an additional \$165.00 for out-of-state tuition.

TUITION: Students classified as out-of-state are charged an additional \$1,891.00 per semester for full-time students or \$165.00 per semester hour for part-time students. Thus, an out-of-state full-time student is charged \$2,952.00. An out-of-state student who is enrolled part-time is charged \$268.00 per semester hour.

All determinations concerning the classification of students as in-state or out-of-state for fee purposes are made in the Office of Admissions by the residency adviser. The determinations are based on the regulations and guidelines of the Tennessee Board of Regents. If, for any reason, there is a question about a student's residency classification for fee

paying purposes, it is his or her responsibility to check with the residency adviser.

FEES FOR TOTALLY DISABLED PERSONS AND PERSONS OVER 60 YEARS OF AGE: Persons with a permanent disability which totally incapacitates them from the potential to work at an occupation which brings an income, and persons who will become 60 years of age or older during the academic semester in which they begin classes, and who are domiciled in Tennessee, may AUDIT courses without paying tuition charges, maintenance fees, student activity fees, or registration fees. Admission to AUDIT will be limited on an individual classroom basis according to space availability.

Any person who is totally disabled, and persons who will become 65 years of age or older during the academic semester in which such persons begin classes, and who are domiciled in Tennessee, may enroll for courses for CREDIT at the cost of \$52.00 per graduate semester hour, not to exceed \$75.00 per semester. The University Health Services shall examine certification of permanent disability (not the applicant) and determine the eligibility of the applicant under this legislation.

Inquiries concerning these programs may be addressed to the Registration and Scheduling Office, Room 167, Administration Building.

STUDENT ACTIVITY FEES: All students enrolled for one to five credit hours will pay a student activity fee of \$4.00 per hour. All students enrolled for six or more credit hours will pay a student activity fee of \$48.00.

Students paying the fee for six or more hours are entitled to admission to home athletic events and certain health services, concerts, plays, social and other student-sponsored activities, and a subscription to the student newspaper, *The Helmsman*. Student activity fees for the summer session are determined solely on a semester hour basis.

TECHNOLOGY ACCESS FEE: All students enrolled for one to four credit hours will pay a technology access fee of \$3.00 per hour. All students enrolled for five or more credit hours will pay a technology access fee of \$15.00. This fee provides to students computer laboratories and other computer support.

REFUND OF MAINTENANCE FEES, OUT-OF-STATE TUITION, MUSIC FEES: The following refund percentages apply to students who withdraw from the University or who drop to an hourly load below full-time.

A. 100% Refund: (1). A full (100%) refund of these fees will be provided for

courses cancelled by the University. (2). A full (100%) refund of these fees will be provided beginning at the moment of Priority/Continuous Registration and extending until the conclusion of Regular Registration. (3). A full (100%) refund of these fees will be provided in case of death.

B. 75% Refund: A 75% refund of these fees will be provided beginning with the conclusion of Regular Registration and extending for a period of time as noted in the term calendar for each semester.

C. 25% Refund: A 25% refund of these fees will be provided beginning at the expiration of the 75% refund period and extending for a period of time as noted in the term calendar for each semester.

REFUND OF STUDENT ACTIVITY FEES, TECHNOLOGY ACCESS FEES:

A. A full (100%) refund of these fees will be provided beginning at the moment of Priority/Continuous Registration and extending until the conclusion of Regular Registration.

B. During the normal 75% refund period, a 90% refund of these fees will be provided.

C. During the normal 25% refund period, a 75% refund of these fees will be provided.

D. After the end of the normal 25% refund period, there will be no refund of the Student Activity Fee, the Technology Access Fee.

The University's refund policy is based entirely upon the official date of the withdrawal or change of course which would result in a refund. Refunds beyond the specified date or percentage will not be made for reasons such as employment conflicts, health or medical problems, moving out of town, or other reasons which are beyond the University's control or responsibility.

NOTE: The dates for these refund periods are found in the term calendar in the *Schedule of Classes*. The refund period ends earlier than the final deadline for dropping a course or withdrawal.

Refunds will be processed beginning approximately one week after classes begin and usually should be completed five weeks after classes begin.

The University will offset against proposed refunds any amount owed by the student to the University.

STUDENT HOUSING

RESIDENCE HALLS: Charges for rooms in University residence halls are indicated below. For information concerning application for rooms, contact the Office of Residence Life. There is a request form in the back of this *Catalog*.

Application Procedures: Applications for residence hall space may be obtained

from the Office of Residence Life, The University of Memphis, Memphis, TN, 38152. Because spaces are allocated by date of receipt and home address, completed applications accompanied by the required \$100 application/reservation deposit should be returned to the Office of Residence Life as soon as possible. Checks or money orders should be made out to The University of Memphis. Please do not send cash.

Receipt by the Office of Residence Life of the Housing application and \$100 check or money order, however, does not guarantee admission to the University or to a residence hall. THE DIRECTOR OF RESIDENCE LIFE RESERVES THE RIGHT TO REFUSE ANY HOUSING APPLICATION, TO CHANGE OR CANCEL ANY ASSIGNMENT, OR TO TERMINATE A RESIDENT'S OCCUPANCY, FOR JUSTIFIABLE CAUSE.

Contract Period and Conditions: Fall assignment/contracts are for the full academic year (fall and spring semesters). Fall residents wishing to petition for release from their contract for the spring semester must do so in writing by November 1. Residents who cancel after this date, but prior to claiming their key for the spring semester, will forfeit 50% of their application/reservation deposit. Residents who fail to cancel by the close of the check-in period will forfeit the entire \$100 deposit. The application/reservation deposit, once submitted with the application, covers your initial term of occupancy and all subsequent terms of occupancy and continues until such time as it is cancelled in writing. There will be no penalty if written cancellation is received prior to the published deadline for any specific contract period.

Residents claim and vacate their rooms according to directions issued by the Department of Residence Life. Returning and new residents will have claimed their spaces if any of all of the following procedures have occurred: (1) receiving the room key during the check-in period, (2) paying residence hall rent in full or in part by the end of the check-in period, (3) returning the signed contract with the rental payment.

Cancellation Policy: Full deposit and pre-payment of rent will be refunded if: (1) the institution is notified by the following cancellation deadlines for the first semester in which the contract is in force: July 1 fall residents; December 1 - new spring residents; May 1 - summer residents; (2) the student is prevented from entering the University because of personal medical reasons confirmed in writing by a licensed physician; (3) residence hall space is not available; or (4) if the applicant has not been assigned to a room at the time written cancellation is received by Residence Life; or (5) the student is denied admittance or re-admittance to the Uni-

versity. Full refund will be made in the case of death. Fall residents wishing to petition for release from their contract for the spring semester must do so in writing by November 1. NO REFUNDS WILL BE MADE FOR OTHER THAN THE ABOVE CONDITIONS.

Assigned applicants who fail to cancel by the deadline referred to in (1) above but cancel before the close of the check-in period will forfeit 50% of their deposit. Assigned residents who fail to cancel by the close of the check-in period will forfeit their entire deposit. (This is applicable to both the fall and spring semesters.)

Refund of Residence Hall Rent: Refunds of residence hall rent after registration will be prorated on a weekly calendar basis when the student is forced to withdraw from the residence halls: (1) because of personal medical reasons confirmed by a licensed physician in writing, or (2) at the request of the institution for other than disciplinary reasons. Full refund will be made in the case of death.

For reasons other than the above stated, the following procedure shall apply: 75% of fees will be refunded for withdrawal from the residence halls for a period of approximately 14 calendar days beginning with and inclusive of the first official day of classes or within an equivalent period for a short-term course. 25% of fees will be refunded following expiration of the 75% period, for a period of time extending approximately 25% of the time, covered by the term. The periods during which refunds of 75% or 25% will be made are exactly the same as the periods during which the same refund percentages are made for maintenance fees. NO REFUNDS WILL BE MADE FOR OTHER THAN THE ABOVE CONDITIONS.

Dormitory	Type Room	Semester Rate***
Browning	Double	\$770
	Single	1070
Hayden	Double	965
	Single	1340
McCord	Double	770
	Single	1070
Mynders	Double*	740
	Small	
	Single*	975
	Middle	
	Single*	1015
	Large	
	Single*	1045
	Large	
	Single**	1070
Rawls	Double	795
	Single	1110
Richardson Towers N	Double*	850
	Single*	1190
Richardson Towers S	Double*	850
	Single*	1190
Robison	Double	795
	Single	1110
Smith	Double	795
	Single	1110
West	Double	795
	Single	1110
Student Housing Complex	Apartment	1390
	Townhouse	1435

*Semi-Private Bath

**Private Bath

*** Fees quoted are for 1992-93 Academic Year and are subject to change.

STUDENT FAMILY HOUSING: Student Family Housing is located on the South Campus approximately one mile from the main campus. Phase One consists of 56 one-bedroom townhouse apartments, 62 two-bedroom townhouse apartments, and 8 two-bedroom flats. All apartments are equipped with stove, refrigerator, garbage disposal, living room carpet, and venetian blinds. Electric central heat and air are also provided. An enclosed private patio is located to the rear of each apartment. The new Phase Two consists of 24 two-bedroom flats. These apartments are equipped with stove, frost-free refrigerator, garbage disposal, dishwasher, venetian blinds, thermal pane windows, hook-ups for stackable washers and dryers, and carpet for living room and bedrooms. Gas central heat and air are also provided. Each apartment has a patio/balcony with locking storage area. Four apartments are specifically designed for physically disabled students.

Application forms may be obtained from the Office of Residence Life in Room 011, Richardson Towers. A \$100 application/reservation deposit is required when the application is submitted.

MISCELLANEOUS FEES

ADDING AND DROPPING COURSES:

A fee of \$5.00 will be charged, beginning with the first day of the Late Registration period, for each Change of Course form processed, regardless of the number of course or section changes included on the form.

APPLIED MUSIC COURSES: Applied music lessons are taught in 1/2 hour segments. One hour of credit requires 1/2 hour of instruction per week for which the fee is \$35.00 per semester. Two or more hours of credit require one hour of instruction per week for which the fee is \$70.00 per semester.

AUTOMOBILE REGISTRATION: Each person who expects to operate and park any motor vehicle on the campus must purchase an official permit, which is valid for the semester, and register the vehicle in the Parking Office (3918 Central). Proof of ownership must be presented when registering the vehicle, and the student's registration receipt must be presented to receive the parking permit. Parking permit fees range from \$15 to \$100, based on the level of parking desired.

CREDIT BY EXAMINATION OR PLACEMENT EXAMINATION: The fee

for taking an examination for credit or a placement examination is \$60.00 minimum and an additional \$15.00 for each hour in excess of three (3). These fees are non-refundable and must be paid prior to the examination.

DISSERTATION: A student completing the doctorate will be required to pay the \$7.50 fee for binding each copy of the dissertation and in addition a fee of \$60.00 to defray the cost of microfilming the dissertation and publishing the abstract. A minimum of three copies are required, and the student should consult with the department chair and/or dissertation adviser as to the number of additional copies required.

GRADUATION FEE: Each candidate for a Master or specialist degree from The University of Memphis pays a \$35.00 fee to cover cost of the diploma, rental of cap and gown, and incidentals connected with the commencement exercises. This fee is \$45.00 for the doctoral candidate. This fee must be paid thirty days before graduation.

IDENTIFICATION CARDS: The University issues to each student an identification card which bears the student's photograph and social security number. The card remains the property of the University and will be surrendered upon request of a University official.

Inquiries about student identification cards should be made in the I.D. office, Room 176, Administration Building. The card is required for the borrowing of library books, admission to or approval to pick up or purchase student tickets to athletic and social events, the sale of used textbooks, and other official purposes.

Part-time students who are enrolled for at least six semester hours of credit courses will be given full-time I.D. card privileges.

The student I.D. card is automatically validated each semester the student enrolls and satisfies registration fees.

If an I.D. card is lost or stolen, the student has twenty-four hours to file the proper report with the I.D. office and/or the Public Safety Office. In all cases, a student will be required to have a replacement card made. The replacement fee is \$10.00 for a card that has been damaged, stolen, or lost. Students will be charged a \$2.00 fee to make any change in data on the card.

Fraudulent use of the I.D. card will result in disciplinary action! The card is issued to the individual student and may not be loaned to another person for any

reason. Each student must have no more than one (1) student identification card at a time.

LABORATORY DEPOSITS: Certain courses in chemistry require deposits from \$10.00 to \$20.00 per semester, depending upon the course. Any unused portion of these deposits will be refunded.

LATE REGISTRATION: Students who do not complete registration (including the satisfaction of fees) by the conclusion of Regular Registration will be charged \$10.00 for any late registration.

MEALS: The University cafeterias, Student Center and vending areas, open to all students, provide wholesome food at reasonable prices. The cost of meals per student is estimated to be \$1,850 per academic year.

MUSIC LOCKER DEPOSIT: Music students are required to have a locker for storage of University-owned musical instruments or equipment. Personal instruments may also be stored in lockers. A deposit of \$3.00 for one semester or \$4.00 for two semesters is required on each locker issued. This deposit, less a service charge of \$1.50 per semester, will be refunded upon return of the lock. Students will be expected to pay for any damages.

PHYSICAL EDUCATION LOCKER AND TOWEL FEE: Students enrolled in physical education courses must pay a fee of \$4.00 for the locker and towel issued them. Students must provide their own lock.

RETURNED CHECKS/CHARGE CARD DRAFTS: It is expected that a check or draft given to the University, for any reason, will be honored by the bank on which it is drawn. A check or draft dishonored by the bank on which it is drawn may be presented a second time at the discretion of the University. A \$15.00 returned check/draft charge will be assessed for all checks/drafts returned. Returned checks/drafts, used in payment of registration fees, which are not promptly redeemed, will result in the deletion of the student from the class rolls.

NO-MORE-CHECKS STATUS: The privilege of making payments for fees and charges by personal check and check cashing privileges will be revoked for any student who has had more than one returned check/draft within a twelve month period for a period of one (1) year from the date the last check/draft is redeemed. A student will not be permitted to pay registration fees by check if any previous check in payment of registration fees has been returned.

SUMMARY OF EXPENSES

	Academic Year 1992-93	
	Per Hour (Summer and Part Time)	Fall and Spring Semester Per Semester (Full Time)
Graduate:		
In-State Maintenance	\$ 103.00	\$1,061.00
Out-of-State Tuition	165.00	1,891.00
Out-of-State Total	\$268.00	\$2,952.00
Activity Fee	\$4.00	\$48.00
Student Housing:		
(see listing earlier in this section)		
Applied Music Courses:		
(see information earlier in this section)		
Incidental Charges:		
Adding or dropping courses, per form after Regular Registration		5.00
Application for admission		5.00
Automobile Registration, per automobile (General Parking)		15.00
Diploma (Master or Specialist)		35.00
Diploma (doctoral)		45.00
Late Registration after regular registration period		10.00
P. E. locker and towel, per semester		4.00
Deposits:		
Dormitory Rooms (refundable less charges, upon termination of occupancy)		100.00
Laboratory breakage (refundable less charges)	Variable	3.00
Music locker deposit, per semester per year		4.00

Additional Charges

The university reserves the right to increase the charges listed herein or to add new ones whenever such increases or additions are found to be necessary.

THESIS: Students will be required to present a receipt from the Bursar's Office to the Graduate Office showing that they have paid a fee of \$7.50 for each thesis which is to be bound. A minimum of three copies are required. Students should consult with their department chair and/or thesis adviser as to the number of copies required.

TIGER FUNDS: A debit card account program, Tiger Fund\$, is available to all The University of Memphis students. A Tiger Fund\$ account is a declining balance account using the university I.D. card to provide students with a safe and convenient money management system. Contact the Identification Card Office, 176 Administration Building, for complete details.

TRANSCRIPTS: There is no fee for transcripts. Official transcripts are limited to a maximum of five (5) per request. Transcripts are issued only at the request

of the student in person or by letter. No transcript will be provided for a student who has any unfulfilled obligation to the University.

APPEAL PROCEDURES

APPEAL PROCEDURES FOR FEES AND REFUNDS: A student may appeal the assessment, application, calculation or interpretation of any University fee, charge, deposit, or refund, or any University action connected with fees and charges. Questions should generally be discussed with personnel in the Bursar's Office. If a student is not satisfied with the resolution made by the Bursar's Office, a written appeal, on forms available in the Bursar's Office, can be made to the assistant to the director of finance; this determination may be appealed to the University's Fee/Refund Appeals Committee. All appeals must be made in writing within ten (10) days of the previous decision. Traffic fines are subject to a separate appeal procedure.

THE UNIVERSITY IS THE ONLY INSTITUTION IN
WESTERN SOCIETY WHOSE BUSINESS IT IS TO
SEARCH FOR AND TRANSMIT TRUTH REGARDLESS
OF ALL COMPETING OR CONFLICTING PRESSURES
AND DEMANDS; PRESSURES FOR IMMEDIATE
USEFULNESS, FOR SOCIAL APPROVAL, PRESSURES TO
SERVE THE SPECIAL INTERESTS OF GOVERNMENT, A
CLASS, A PROFESSIONAL GROUP, A RACE, A FAITH,
EVEN A NATION.

— HENRY STEELE COMMAGER

4. DEGREE PROGRAMS AND COURSES

THE COLLEGE OF ARTS AND SCIENCES

JOHN R. HADDOCK, Ph.D.,
Interim Dean

MARGARET M. CAFFREY, Ph.D.,
Interim Director of Graduate Studies

GRADUATE ACADEMIC PROGRAMS

Department	Major	Concentration Within Major	Degree Offered
Anthropology	Anthropology	(1) Urban Anthropology (2) Medical Anthropology (3) Archaeology	Master of Arts (M.A.)
Biology	Biology	Immunohematology	Master of Science (M.S.)
		(1) Botany (2) Cell Biology (3) Invertebrate Zoology (4) Microbiology (5) Vertebrate Zoology	Master of Science (M.S.) Doctor of Philosophy (Ph.D.)
Chemistry	Chemistry	(1) Inorganic (2) Analytical Chemistry (3) Organic (4) Physical Chemistry	Master of Science (M.S.) Doctor of Philosophy (Ph.D.)
Criminology and Criminal Justice	Criminal Justice		Master of Arts (M.A.)
English	English	(1) Language and Linguistics (2) Literature (3) Writing (a) Creative (b) Professional (4) English as a Second Language	Master of Arts (M.A.)
	Creative Writing		Master of Fine Arts (M.F.A.)
Foreign Languages and Literatures	Romance Languages	(1) French (2) Spanish	Master of Arts (M.A.)
Geography and Planning	Geography		Master of Arts (M.A.) Master of Science (M.S.)
	City and Regional Planning		Master of City and Regional Planning (M.C.R.P.)
Geological Sciences	Geological Sciences	(1) Geology (2) Geophysics	Master of Science (M.S.)
	Geophysics		Doctor of Philosophy (Ph.D.)
History	History		Master of Arts (M.A.) Doctor of Philosophy (Ph.D.)
Mathematical Sciences	Mathematics	(1) Applied Mathematics (2) Mathematics (3) Statistics (4) Computer Science	Master of Science (M.S.)
		(1) Mathematics (2) Applied Statistics (3) Computer Science	Doctor of Philosophy (Ph.D.)
Philosophy	Philosophy		Master of Arts (M.A.) Doctor of Philosophy (Ph.D.)
Physics	Physics		Master of Science (M.S.)
Political Science	Political Science		Master of Arts (M.A.)
	Public Administration	(1) Urban Management and Planning (2) General Public Administration (3) Health Services Administration (4) Human Resource Administration	Master of Public Administration (M.P.A.)
	Health Administration		Master of Health Administration (M.H.A.)
Psychology	Psychology	General Psychology	Master of Science (M.S.)
	School Psychology		Master of Arts (M.A.)
	Psychology	(1) Clinical Psychology (2) Experimental Psychology (3) School Psychology	Doctor of Philosophy (Ph.D.)
Sociology and Social Work	Sociology		Master of Arts (M.A.)

The College of Arts and Sciences contains fifteen departments, each of which offers graduate degrees. Candidates for each of these degrees must pursue a curriculum plan which has the approval of their major adviser, the department chair, and the Graduate Dean. Every graduate student is expected to comply with the general requirements of the Graduate School (see Chapter 1 of this *Catalog*) and the program requirements of the degree being pursued (see departmental listings in this chapter).

MASTER'S DEGREES

The programs for the **MASTER OF ARTS** degree are generally open to those who have completed the Bachelor of Arts degree. Others may enroll in these programs if undergraduate prerequisites are met. Students majoring in the following areas may pursue the Master of Arts degree: Anthropology, Criminal Justice, English, Geography, History, Philosophy, Political Science, Psychology, Romance Languages, and Sociology (see departmental listings).

The **MASTER OF FINE ARTS IN CREATIVE WRITING** is a degree program (48 semester hours) for students who plan to pursue a career in fiction writing or poetry. Admission to the program is based primarily on a portfolio of work in the student's chosen

genre. The course work includes both literature and writing classes, and culminates with submission of a publishable collection of fiction or poetry as the thesis.

The program for the **MASTER OF PUBLIC ADMINISTRATION** degree is generally open to students with preparation in the social sciences or in business courses. Students working toward this interdisciplinary degree complete a core curriculum in public administration courses and a concentration in one of the following areas: General Public Administration, Health Services Administration, Human Resource Administration, and Urban Management and Planning. (see listing for Political Science).

The **MASTER OF HEALTH ADMINISTRATION** is a 48 semester hour program for those interested in managerial and administrative careers in the health care community.

The programs for the **MASTER OF SCIENCE** degree are generally open to students with a science background. Students enrolled in the following areas may pursue the Master of Science degree: Biology, Chemistry, Geography, Mathematical Sciences, Physics, and Psychology (see departmental listings).

The **MASTER OF CITY AND REGIONAL PLANNING** is a professional degree for

students interested in government and business careers. Students complete the following: a core curriculum of 30 semester hours; a 15 hour elective curriculum with possible subjects in economic development planning, urban design, land use and transportation planning, planning information systems, housing and community development, planning law, and environmental planning; and a 3 hour Capstone Project which integrates one or more elective subjects with the Core curriculum.

DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy Degree is offered in the following departments within the College of Arts and Sciences: Biology, Chemistry, Geophysics, History, Mathematical Sciences, Philosophy, and Psychology. General requirements for the Ph.D. Degree are outlined in these departmental listings. More detailed information about prerequisites, course work, research requirements, etc., may be obtained from the chair or graduate coordinator of the respective departments, or from the college level director of graduate studies. Any of these departments may choose to admit a student to doctoral study without requiring the master's degree as a prerequisite.

ANTHROPOLOGY

LINDA A. BENNETT, Ph.D., *Chair*
Room 124, Clement Hall

CHARLES H. McNUTT, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Anthropology offers a Master of Arts degree with a major in Anthropology with the purpose of training students as competent practicing anthropologists in the fields of multiethnic community organization, health care delivery systems, contract research and service in archaeology.

II. Concentrations are available in Urban Anthropology, Medical Anthropology, and Archaeology. Each student will plan his or her program in consultation with his or her major adviser.

III. M.A. Degree Program A. Program Admission

Admission to both the Graduate School and the department is required. To meet departmental requirements for admission, students must submit a letter of intent and the letters of recommendation. In addition to their undergraduate academic record, applicants will be considered on the basis of their work experience and career plans.

Admission to the program is not automatic upon meeting minimum departmental admission requirements. Students are selected from a pool of qualified applicants and the number selected depends on the availability of financial aid and adequate faculty supervision.

Note: Deadline for completion of submission is April 22 for the following fall semester and December 1 for the following spring semester. Summer school admission must be completed by May 1 for entrance into the Graduate School and the departmental program. Field school admissions (only) will be accepted until May 15. Late submissions may, in exceptional circumstances, be considered on an individual basis, but will normally be deferred to the following semester.

B. Program Requirements

1. A total of 30 semester hours course work plus satisfactory performance in a practicum (Anthropology 7985—6 hours credit) for a total of 36 semester hours.

2. Satisfactory completion of the core curriculum (14 hours).

3. Satisfactory completion of track-specific requirements (6 hours).

4. At least 70% of the program (i.e. 26 hours) must be taken at the 7000 level.

5. Satisfactory performance on a comprehensive exam.

6. The Master's Degree in Anthropology is an interdisciplinary degree and students are encouraged to take up to 9 semester hours of their work outside of the Department of Anthropology, depending upon their area of interest and the nature of previous work experience.

EO10 ANTHROPOLOGY (ANTH)

6051. Anthropology and Education. (3). (Same as EDFD 6051) Advanced study of the cultural transmission process with emphasis on identifying differing behavioral, cognitive and learning styles of various ethnic groups within American society and selected third world countries. Encounters of U.S. subcultural groups with the public education system. PREREQUISITE: Permission of instructor.

6065. Contemporary Anthropological Theory. (3). Contemporary growth of theories and methods in anthropology. PREREQUISITES: ANTH 1100 and 1200; or permission of instructor.

6111. Human Adaptations (3). Human populations and their variability; examination of the human adaptations in locomotion and manipulation, facial structure, the brain and language, and reproduction; comparisons to the anatomy, physiology, and behavior of other primates.

6251. Psychological Anthropology. (3). (6751). Comparison of factors involved in analysis of personality as contrasted to culture, interaction of these factors; problems of studying personality crossculturally.

6252. Economic Anthropology. (3). Comparative analysis of economic systems and their functional relationships to other cultural institutions; production, distribution, and consumption in non-literate groups; concepts of wealth, value, property, and ownership. PREREQUISITE: ANTH 1200 and at least one survey or area course in ethnology; or permission of instructor.

6253. Anthropology of Religion. (3). Comparative analysis of religious systems and their functional relationships to other cultural institutions; interrelations of myth, magic, and ritual; types of religious institutions and religious practitioners.

6255. Applied Anthropology and Development. (3). Cross-cultural review of processes of change, grassroots development and planning in industrialized world; models of change specializations in applied anthropology, and development of public policy on international issues of housing, education, health, and economic development.

6301. Archaeology of North America. (3). Description and distribution of prehistoric cultural remains in North America north of Mexico. Major regional sequences, extending from the earliest evidences of human occupation until historic times.

6325. Archaeological Field Techniques. (3). Field excavation, specimen preparation, use of survey instruments and geophysics, map making and archaeological record keeping. May be repeated for maximum of 6 hours credit. PREREQUISITE: permission of instructor.

6326. Archaeology Laboratory Analysis (3). Methods and techniques in archaeology laboratory; emphasis on preparation of artifacts and records for interpretation and curation. May be repeated for a maximum of 6 hours credit. PREREQUISITE: Permission of instructor.

6330-39. Special Topics In Archaeology. (3). Analysis of selected topics in archaeology. May be repeated for a maximum of six hours credit.

6351. Evolution of Civilization. (3). Comparative investigation of the origins of civilization in the Old and New Worlds. Development and study of models to explain the cultural, social, political, and other changes that lead to and define civilization. PREREQUISITE: ANTH 1200 or permission of the instructor.

6360. Environmental Reconstruction. (3). Cultural ecology in past environmental regimes; emphasis on interdisciplinary approach to extinct social systems and their relationship with environment.

6370. Historic Archaeology. (3). Review of the contributions of archaeologists to historical research.

The methods and techniques of archaeologists as required and modified by the excavation and interpretation of historic materials. The allied specialties unique to Historic Archaeology including documentary investigations and the conservation and restoration of existing structures.

6380. Museums in Society. (3). (Same as Art 6380). History of museums and how they function in society; development of major collections and centers of research and education and as interpreters of social values.

6382. Professional Practices in Museums. (3). (Same as Art 6382). Basic aspects of museum organization, management, exhibit planning and execution, and maintenance of collections and records.

6411. Urban Anthropology. (3). Anthropological studies of pre-industrial and industrial cities. Urbanization, movements of social transformation and other processes of adjustment to an urban milieu. Urban slums, ethnic enclaves, and housing developments in cross-cultural perspective. Urban and social kinship and social organization. Urban community development. Urban research techniques.

6420. American Folklore. (3). Selected genres of American folklore, including folk religion and belief, folk medicine, folksong and music, narrative and humor (jokes and riddles). Comparisons to other cultures. Emphasis on role of folklore in maintenance of tradition, in social change, and in concept of culture.

6511. Medical Anthropology. (3). Cross-cultural analysis of bio-behavioral components of infectious, nutritional, genetic, chronic and psychiatric diseases. Individual and cultural reactions to medical care, professionals and health care delivery systems.

6521. Folk Medicine in the U.S. (3). Medical alternatives to the standard health care system. Concepts of illness associated with such practices as the use of medicinal plants, faith healing, chiropractic. Clinical effectiveness of folk herbal medicine and psychotherapy. The health professional's role in caring for persons with different perceptions of health and disease will be emphasized.

6531. Alcohol, Culture, and Biology. (3). Crosscultural comparison of beliefs, rituals, and meaning of alcohol consumption and alcoholism; examination of biological and cultural evidence for development of alcohol-related problems; implications for prevention, early intervention, and treatment.

6541. Nutritional Anthropology. (3). Human nutrition in cross cultural perspective. Basic nutritional requirements. Interrelations of dietary behavior with resource availability and with cultural attitudes regarding nutritive and health values for foods. Dietary aspects of acculturation and culture change. Methodology in the assessment of nutritional status and nutritional insufficiencies. Exemplary case studies.

6551. Culture and Childbirth. (3). Review of biological, environmental, social and cultural factors influencing human reproduction; comparison of individual, community and clinical approaches to fertility, birth control, pregnancy, birth and post-partum care; evaluation of alternative delivery systems in Western and non-Western societies.

6561. Cultural Context of Deviant Behavior. (3). Review of perceptions of normality in different societies, cultural definitions of and responses to deviance, promotion and discouragement of inappropriate behavior; evaluation of mental illness, violence, drug abuse, cannibalism, suicide, sexual practices and everyday behavior in relation to cultural definitions of normality.

†7001. Internship for Graduate Assistants. (1-3). Supervision of and consultation with anthropology graduate assistants. Credit not applicable to major. May be repeated. PREREQUISITE: Limited to anthropology majors; approval of graduate coordinator.

†702. Reading for Comprehensives. (1-3). Arranged on individual basis for anthropology graduate students only. Credit not applicable to major. May be repeated. PREREQUISITE: Limited to anthropology majors; approval of graduate coordinator.

†703. The Anthropology Profession. (1-3). Presentations relating to profession of college teaching, including methods and means of research and publication in different fields of anthropology. Credit not applicable to major. PREREQUISITE: Permission of graduate coordinator.

†7004. Teaching Skills for Graduate Assistants. (1-3). Overview and practical demonstrations of art of teaching anthropology. Credit not applicable to major. May be repeated. PREREQUISITE: Limited to anthropology majors; permission of graduate coordinator.

†7005. Workshop in Professional Development for Graduate Assistants. (1-3). Research design, practice, and methodology in professional writing in anthropology; specific emphasis on practicum proposal preparation. May be repeated. PREREQUISITE: Limited to anthropology majors; permission of graduate coordinator.

†7006. Skills for Research/Proposal Preparation. (1-3). Research design, practice, and methodology in professional writing in anthropology; specific emphasis on practicum proposal preparation. May be repeated.

†7007. Anthropological Field Trips. (1-3). Travel to regional neighborhoods, communities, and archaeological sites; may include cultural, geological, and physiographical areas of the Mid-South; specific emphasis on visual examination of social, cultural, and biophysical environment and preparation of field notebooks. May be repeated. PREREQUISITE: Limited to anthropology majors; permission of graduate coordinator.

7075. Methods In Anthropology. (4). Critical examination of field methods and research designs in selected areas of anthropology. Major trends in contemporary anthropological research as a preparation for applied research.

7076. Techniques of Anthropological Data Analysis. (4). Construction and analysis of data bases developed from ongoing anthropological projects; review of frequently used statistical techniques in anthropological literature, hypothesis testing, and methods of presentation. PREREQUISITE: ANTH 7075 or permission of instructor.

7100. Seminar In Biocultural Anthropology. (3). Topics include principles of human genetics, the biological and cultural aspects of race, the hereditary and environmental factors in modern human variation, medical and nutritional anthropology.

7200. Seminar In Cultural Anthropology. (3). Topics include the nature of culture and its various aspects including language, social organization, economics, technology, the development of civilization, and the process of urbanization.

7310. Archaeological Theory and Method. (3). History of archaeology and development of conceptual framework for archaeological data collection and interpretation; current theories and methods including use of allied specialties.

7311. Public Archaeology. (3). Roles and responsibilities of the archaeologist in contract and salvage work, in museum research and administration, and in the public dissemination of archaeological information. A review of relevant state and federal legislation.

7321. Archaeological Field Analysis. (3). Methods of dealing with archaeological field problems; individual instruction in collection, recording, and field analysis of both historic and prehistoric archaeological data.

7380-89. Special Topics in Archaeology. (3-6). Topics in Public Archaeology. No more than six hours may be counted toward degree requirements in Anthropology.

7390-99. Special Topics in Museology. (1-3). Topics in site interpretation/museology. No more than six hours may be counted toward degree requirements in Anthropology.

7411. Urban Anthropology In the Mid-South. (3). Discussion and analysis of community economic development in the Mid-South region from prehistoric to present time; inter-relationship of cultural values, regional social structures and political economy in terms of international and national industrial trends.

7490-99. Special Topics in Urban Anthropology. (3). Topics of special interest in Urban Anthropology. No more than six hours may be counted toward a degree in Anthropology.

7511. Anthropology of Health Care Professions. (3). Roles of the various health professions in the delivery of medical care with emphasis on the perception of these roles by racial or ethnic groups in the Mid-South. Lectures by medical professionals and administrators.

7590-99. Special Topics in Medical Anthropology. (3). Topics in Medical Anthropology. No more than six hours may be counted toward degree requirements in Anthropology.

7970. Directed Individual Writing. (1-3). Intensive guided study of original data in areas selected by advanced students and accepted by the instructor. Preparation of manuscripts for publication. PREREQUISITE: Permission of instructor.

7975. Directed Individual Readings. (1-3). Intensive guided study of original data in areas selected by advanced students and accepted by the staff. PREREQUISITE: Permission of staff.

7980. Directed Individual Research. (1-3). Intensive guided study of original data in areas selected by advanced students and accepted by the staff. Preparation for publication. PREREQUISITE: Preparation of chair and the designated staff.

†7985. Anthropological Applications. (3, 6). Supervised practical experience in the application of anthropological principles in an agency or facility appropriate to urban, medical and nutritional anthropology, mental health or archaeology.

†Grades of S, U, or IP will be given

BIOLOGY

MELVIN L. BECK, Ph.D., *Chair and Director of the Division of Ecology and Organismal Biology*
Room 108, Ellington Biology Building

S. EDWARD STEVENS, Ph.D., *Director of the Division of Molecular Sciences and Microbiology*
Room 201, Life Sciences Building

I. The Department of Biology offers the Master of Science and Doctor of Philosophy degrees with a major in Biology and concentrations in Botany, Cell Biology, Invertebrate Zoology, Microbiology, and Vertebrate Zoology. A concentration in Immunohematology with a major in Biology for a Master of Science degree is also available.

II. M.S. Degree Program

A. Program Admission

1. An overall minimum grade point average of 2.50 at the undergraduate level.
2. Scores for the Aptitude and Advanced Biology portions of the Graduate Record Examination. A combined score of at least 800 is required on the Verbal and the Quantitative portions (minimum 400 on each) of the Graduate Record Examination.
3. Two letters of recommendation.

B. Program Requirements (Thesis)

1. A minimum of 30 semester hours beyond the baccalaureate degree is required.
2. Biology 7000, 7004, 7200, 7600, and 7996. Attendance in seminar is mandatory. Biology 7000 must be completed during the first year of residence; Biology 7200 before the last semester; and Biology 7600 in the last semester.
3. The maintenance of a grade point average of 3.0. Continuation of a student who makes a "C" or below is at the discretion of the student's Advisory Committee.

4. A written examination covering subject matter designated by the advisory committee will be administered once each semester and during the summer term on a date published by the department.
5. Presentation of research (7600) and a thesis (7996) as approved by the student's Advisory Committee.
6. Final oral examination.

C. Program Requirements (Non-thesis)

1. A minimum of 33 semester hours of graduate courses. The total number of semester hours required for graduation will be determined by the student's Advisory Committee based on academic background. No more than 3 semester hours can be satisfied by Biology 7092 or 7093.
2. Biology 7004 and 7200. Attendance in seminar is mandatory. Credit of 1 semester hour will be earned during the semester the student presents the Biology 7200 seminar.
3. The maintenance of a minimum grade point average

of 3.0. Continuation of a student who makes a "C" or below is at the discretion of the student's Advisory Committee.

4. Final written and oral examinations which will be administered by the student's Advisory Committee during the final semester of residence.

III. Ph.D. Degree Program

A. Program Admission

1. The prospective doctoral student must normally hold a master's degree from a recognized institution. However, a student may petition for an optional program leading directly to the Ph.D.

2. All students will be required to submit satisfactory scores for the Aptitude and Advanced Placement Test of the Graduate Record Examination with application to enter the Graduate School. A combined score of at least 1000 is required on the Verbal and the Quantitative portions of the Graduate Record Examination. The minimal acceptable verbal or quantitative score is 400.

3. Two letters of recommendation.

4. A personal interview with departmental personnel.

B. Program Requirements

1. *Course Requirements*—Biology 8000, 8004, 8200, 8600, and 9000. Attendance in seminar is mandatory. Biology 8000 or an equivalent must have been completed by the end of first year of residence. A minimum of 3 semester hours (72 semester hours) beyond the baccalaureate degree is required. A minimum of 30 semester hours (including 18 semester hours of Biology 9000 Research and Dissertation) must be taken in residence.

2. *Qualifying Examination*—Graduate students will be administered a qualifying examination early in the first semester of residence in order to determine their qualifications to become early doctoral students.

3. *Foreign Language and Research*—Students are required to demonstrate competence in foreign language or research tool areas, or both. This requirement will be determined by each student's advisory committee.

4. *Comprehensive Examination and Candidacy*—After two years of course work, the graduate student may take the written and oral comprehensive examination in his or her major area.

Admission to candidacy will be recommended to the Graduate School by the student's committee upon satisfactory completion of any language requirement, course work, comprehensive examination, and acceptance of the dissertation project.

5. *Dissertation and Research Prospectus*—A dissertation will be required of all candidates for the doctoral degree. A minimum of eighteen (18) hours of research and dissertation credit must be completed during the graduate program. The dissertation must show a mastery of the techniques of scientific research, and it must be a distinct and new contribution to the body of scientific knowledge.

The student's committee must approve the topic, prospectus and the final dissertation.

6. *Final Examination*—The final examination will be conducted by the chair of the student's committee. The committee will consist, insofar as possible, of the same persons involved in the comprehensive examinations. The final examination will be an oral defense of the dissertation and will be announced and open to the public. Upon successful completion of the examination and all degree requirements, the committee will recommend awarding the Ph.D.

E060 BIOLOGY (BIOL)

6002. Toxicology. (3). Effects of foreign substances on biological mechanisms. Absorption, excretion metabolism, and biotransformation of potentially harmful substances. PREREQUISITE OR COREQUISITE: CHEM 3312.

6003. Experimental Toxicology. (4). Advanced aspects of toxicology, instrumentation, organism culturing, and procedures involved in assessment of relative toxicity. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 6002, COREQUISITE: CHEM 4511 or consent of instructor.

6050. Field Technique in Ecology. (4). Applied ecology covering practical training in forest, field, aquatic, and atmospheric sampling and analysis. Extended field trips. *Two lecture, four laboratory hours per week.* PREREQUISITE: Consent of instructor.

6055. Ecological and Environmental Issues. (3). Ecological perspective on current environmental issues such as conservation and biodiversity, global

climatic change, and regulation of chemicals in the environment. *Three lecture hours per week.* PREREQUISITE: BIOL 3050 or consent of instructor.

6060. Limnology. (4). Physical and chemical attributes of lakes, ponds and streams; organisms of fresh water; problems of production; laboratory work emphasizes Tennessee lakes, and practical training in limnological methods and identification of organisms. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 1161, and one year of chemistry.

6100. Evolution. (3). Synthesis of principles and concepts of modern evolutionary theory; geological evolution, biological evolution, and evolution of societies; emphasis on recent developments and current controversies.

6151. Developmental Biology. (5). Introduction to study of developing biological systems at cellular and molecular level. *Three lecture, four laboratory hours per week.* PREREQUISITES: BIOL 3072 and CHEM 3312.

6440. Pathogenic Microbiology. (4). Pathogenic bacteria, the diseases they cause and methods of diagnosis with an introduction to immunological principles and immunity. Considerable attention to laboratory methods used for identification of pathogenic bacteria. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 3551, with organic chemistry desirable.

6445. Immunology. (3). (6444). Antigens, immunoglobulin classes, cells and cytokines of immune response, complement system, hypersensitivities, blood groups, vaccines and immunity. *Three lecture hours per week.* PREREQUISITES: BIOL 3551 and CHEM 3311.

6446. Immunology Laboratory. (2). (6444). Methods and exercises that emphasize reactions of antigens and antibodies, immunochemical techniques, cellular immunology, and the immune system.

6450. Microbial Ecology. (3). Roles of microorganisms in the environment. Microbial processes, interactions with the environment and biota, population ecology, community ecology, and biodegradation. *Three lecture hours per week.* PREREQUISITES: BIOL 3551, CHEM 4511, and CHEM 4512, or consent of instructor.

6470. Molecular Genetics. (4). Structure, functions and replication of DNA, recombination, the colinearity of DNA with the genetic map, mutagenesis, gene transfer, plasmids, the code, protein synthesis, suppression, regulation of gene expression, genetic engineering. For students without formal training in molecular genetics. *Four lecture hours per week.* PREREQUISITE: Organic chemistry or consent of the instructor.

6475. Recombinant DNA Techniques. (4). Laboratory with theory and application of recombinant DNA techniques. *Eight laboratory hours per week.* PREREQUISITES: Consent of instructor and BIOL 6470 or equivalent.

6503. Biochemistry Laboratory. (1). (Same as CHEM 6501). Investigation of physical and chemical properties of compounds of biological interest by common laboratory techniques; assay of enzymes and enzyme kinetics. *Three laboratory hours per week.* PREREQUISITES: CHEM 3302 or 3303 and CHEM 3312. PREREQUISITE OR COREQUISITE: BIOL 6511 or CHEM 6511.

6504. Biochemistry Laboratory. (1). (Same as CHEM 6502). Biochemical laboratory techniques with special emphasis on fractionating biological samples and measuring metabolic activity. *Three laboratory hours per week.* PREREQUISITE: BIOL 6511 or CHEM 6511.

6511. Biochemistry I. (3). (Same as CHEM 6511). Chemistry of amino acids and proteins as related to their properties in biochemical systems; enzymology, including kinetics and conformation studies. Coenzymes and their functions; chemistry of carbohydrates, lipids and nucleotides. PREREQUISITE: CHEM 3312. COREQUISITE: BIOL 6503 or CHEM 6501.

6512. Biochemistry II. (3). (Same as CHEM 6512). Continuation of BIOL 6511. Metabolism of carbohydrates, amino acids and nucleotides. Biochemistry of DNA and RNA, including their relationship to biosyn-

thesis of proteins; metabolic control. PREREQUISITE: BIOL 6511 or CHEM 6511. COREQUISITE: BIOL 6504 or CHEM 6502.

6560. Microbiology of Foods. (4). Microorganisms in natural and processed foods; origins, nature and effects on foods, enumeration, and the relation to health. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 3551 or consent of instructor.

6604. Ethology and Behavioral Ecology. (4). Animal behavior, primarily from ecological and evolutionary perspective. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 1161 or equivalent.

6620. Vertebrate Histology. (4). Microscopic study of normal tissues and organs of the vertebrate body. *Three lecture, four laboratory hours per week.* PREREQUISITE: BIOL 3610 or 3620 or permission of instructor.

6630. General Endocrinology. (3). Anatomy and physiology of the organs of internal secretion; role of hormones in metabolism and development. *Three lecture-demonstration hours per week.* PREREQUISITE: BIOL 3730.

6640. Ornithology. (4). Biology of birds, with emphasis on avian anatomy, physiology, behavior, and reproductive biology. Field trips emphasize identification of local species and techniques of field study. *Two lecture, four field/laboratory hours per week.* PREREQUISITE: BIOL 1161.

6644. Ichthyology. (4). Fishes, with special emphasis upon the kinds which occur in Tennessee; collection, preservation and identification; life histories, management, and economic importance of fishes. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 1161.

6651. Field Techniques In Vertebrate Zoology. (4-6). Techniques in extended field study of vertebrates outside the local area. Credit hours to be determined in consultation with instructor.

6740. Mammalogy. (4). Classification, distribution, life histories, economic importance, techniques of field study, methods of collection and preservation of mammals. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 3700 or consent of instructor.

6744. Herpetology. (4). Classification, distribution, life histories, techniques of collection and preservation, natural habitats of North American reptiles and amphibians. *Two lecture, four laboratory hours per week.* PREREQUISITE: BIOL 3620 or 3700 or permission of instructor.

6820. Protozoology. (4). Free-living and parasitic protozoa, with consideration given to structure, function, taxonomy, habitat, and life history.

6840. Invertebrate Zoology. (4). Invertebrate phyla with emphasis on phylogeny, embryology, and ecology of selected groups. Extended field trip. *Two lecture, four laboratory hours per week.*

6930. Insect Physiology. (4). Physiology as applied to the life processes of insects. *Two lecture, four laboratory hours per week.* PREREQUISITES: BIOL 1151.

†7000-8000. Orientation to Graduate Studies. (2). Source of literature in field of biology, data presentation, graphic techniques and manuscript preparation. *One lecture, two laboratory hours per week.*

7002-8002. Ecotoxicology. (3). Effects of pollutants on ecosystem; bioassay techniques, bioconcentration, bioaccumulation, terrestrial and aquatic toxicology, transformations of environmental pollutants, and legal aspects of environmental toxicology. Toxicology integrated with ecology, limnology, and environmental chemistry. PREREQUISITES: CHEM 3312, an ecology and a physiology course.

7003-8003. Fate of Chemicals In the Environment. (3). Physical, chemical and biological behavior of chemicals in water, soil, and air; problem-solving approach used to predict how chemical pollutants behave in environment. *Three lecture hours per week.* PREREQUISITE: Permission of Instructor.

†7004-8004. College Biology Teaching. (1). Under faculty supervision, graduate students participate in teaching of laboratory sections of existing undergraduate courses in the Department of Biology.

Student's performance evaluated by faculty member in charge and appropriate grade assigned. Only one credit hour applicable to degree requirements. Two laboratory hours per week.

17005-8005. Ethics in Science. (2). Discussion of ethical principles associated with research in science including use of organisms in scientific research. Designed for graduate students who intend to pursue career in research. Two lecture hours per week.

17006-8006. Care and Humane Use of Laboratory Animals. (2). Care and use of live vertebrate animals in research and course before working with live vertebrate animals; fulfills requirements of Federal Animal Welfare Act and NIH Guide. One lecture and two laboratory hours per week. PREREQUISITE: Permission of instructor.

7010-8010. Principles and Methods of Systematic Biology. (3). Systematic philosophies and numerical methods developed to deal with systematic and taxonomic problems. Discussions of international rules, concept of species, and the roles and aims of practicing systematists. Projects designed to give practical experience in analyzing data. Two lecture and two laboratory hours per week. PREREQUISITE: BIOL 1151.

7015-8015. Aquaculture. (3). Principles and procedures related to the culture of commercially important freshwater organisms under controlled conditions. Three lecture hours per week.

7030-8030. Cell Ultrastructure. (3). Survey of ultrastructure of prokaryotic and eukaryotic cells; interpreting ultrastructure of organelles and understanding specimen preparation artifacts in electron microscopy; alternate methods for preparing samples; cytochemical methods; cell wall ultrastructure in bacteria and plants, cytoskeleton, ultrastructure of plant-microbe associations, and ultrastructure of plastid development. Three lecture hours per week. PREREQUISITE: BIOL 1151 and 1161 or equivalent.

7031-8031. Cellular Physiology. (4). Cell function; cellular thermodynamics; exchange of materials across cell membranes; physiological buffering systems; enzyme kinetics; cellular respiration; and cellular response to extracellular perturbation. Two lecture, four laboratory hours per week. PREREQUISITE: BIOL 3072 and CHEM 3312 or permission of instructor.

7051-8051. Vertebrate Cell Culture Techniques. (4). Theory, principles and practical preparation in the use of vertebrate cell cultures and cell lines in biomedical research. Two lecture, four laboratory hours per week. PREREQUISITES: BIOL 3072 and CHEM 3312 or permission of instructor.

7070-8070. Cytogenetics. (4). Current theories concerning the nature of the gene and the mechanisms of recombination and mutation. Chromosome aberrations and their genetic behavior. Three lecture, two laboratory hours per week. PREREQUISITE: BIOL 3072.

†7092-8092. Research. (1-4). Consultation, reading, and laboratory work investigating selected topics in biology. Formal paper with review of literature and results of investigation required. May be repeated for maximum of four semester hours credit.

7101-8101. Biological Electron Microscopy. (4). Introduction to techniques in electron microscopy for biologists. One lecture, six laboratory hours per week. PREREQUISITE: Consent of instructor.

7130-8130. Comparative Animal Physiology. (4). Analysis of the physiological mechanisms of animal adaptation and their relevance to evolution, distribution and survival in diverse environments. Two lecture four laboratory hours per week. PREREQUISITES: An upper division course in physiology and organic chemistry.

7131-8131. Cell and Molecular Biology. (4). Introduction to principles of molecular biology as they apply to eukaryotic cells including transcription, translation, regulation of protein function, DNA replication, membrane biosynthesis, secretion, cytoskeleton function, ligand receptor interaction, and protein superfamily. Four lecture hours per week. PREREQUISITES: BIOL 3072 and CHEM 3312.

†7200. Seminar In Biology. (1). (Open to Biology majors only.) A consideration of selected topics in the

biological sciences. Credit is earned when an approved topic is presented to the department prior to the final semester in residence.

7250-8250. Community and Landscape Ecology. (4). Distributions of organisms on worldwide and local basis with emphasis on factors influencing distribution and growth. Two lecture, four laboratory hours per week. PREREQUISITE: BIOL 3050 or consent of the instructor.

7331-8331. Photosynthesis. (2). Lectures and readings on modern theory of photosynthesis. Includes such topics as chloroplast structure and function; chemistry and photochemistry of chlorophyll; influence of external factors on rate of photosynthesis, absorption, fluorescence, and luminescence; energy storage; efficiency; carbon fixation; photosynthesis in cell extracts; phosphorylation. Two lecture hours per week. PREREQUISITES: BIOL 1161, 3230.

7464-8464. Advanced Immunology. (4). Advanced topics and techniques in immunobiology and immunology. Two lecture, four laboratory hours per week. PREREQUISITES: BIOL 6445 and CHEM 6511 or their equivalents.

7500-8500. Virology. (4). Introduction to the viruses. Principles of methodology concerning origin, development, classification, and propagation. Three lecture two laboratory hours per week. PREREQUISITE: BIOL 3551 and organic chemistry.

7530-8530. Bacterial Physiology. (4). Bacterial physiology including growth, nutrition, biosynthesis, and adaptation. Three lecture, two laboratory hours per week. PREREQUISITES: BIOL 3551, or its equivalent, and at least one year of chemistry.

†7600. Seminar in Biology. (1). Selected topics in the biological sciences. Credit is earned when the student presents the results of his thesis research. PREREQUISITE: BIOL 7200.

7610-8610. Environmental Effects on Development. (2). Environment-gene interactions and developmental plasticity; evolutionary, physiological, morphological, and ecological consequences of these interactions. Two lecture hours per week.

7700-20-8700-20. Special Topics in Biology. (1-4). Current topics of special interest in biology. May be repeated for a maximum of four semester hours credit. PREREQUISITE: Permission of instructor.

7750-8750. Physiological and Population Ecology. (4). Relationships of organisms to their environments with special emphasis upon population dynamics and ecological relationships at the individual level. Two lecture, four laboratory hours per week. PREREQUISITES: BIOL 1161 and 3050.

7844-8844. Advanced Parasitology. (4). Animal parasitology with emphasis on techniques and experimental approaches in parasitology. Two lecture, four laboratory hours per week. PREREQUISITE: BIOL 3800 or consent of instructor.

†7996. Thesis. (1-6).

†8200. Seminar in Biology. (1). Selected topics in biological sciences. Credit earned when a seminar on the dissertation problem and research is presented to the department during the second year of the doctoral program.

†8600. Seminar in Biology. (1). Selected topics in biological sciences. Credit earned when the student presents the public oral defense of his dissertation research. PREREQUISITE: BIOL 8200.

†9000. Doctoral Research and Dissertation. (1-10). The dissertation must be an independent research project applying a mastery of the techniques of scientific research. It must be a distinct and new contribution to the body of scientific knowledge and be published or accepted for publication wholly or in part in a recognized journal acceptable to the student's committee. Minimum total of 18 hours is required.

***These courses listed below are taught at the Gulf Coast Research Lab, Ocean Springs, Mississippi. The University of Memphis residence credit is given through affiliation with the laboratory.**

***6010. Aquaculture.** (6). Technology, principles, and problems relating to the science of aquaculture; emphasis on culture of marine species. PREREQUISITES: 16 hours of zoology including invertebrate and vertebrate zoology or ichthyology.

***6020. Comparative Histology of Marine Organisms.** (1-6). Histological organization of representative marine organisms. Fixation, processing, and study of tissues using light microscopy, transmission and scanning electron microscopy. Structural changes and physiological changes during life cycle of organism including histopathology. PREREQUISITES: Consent of instructor.

***6051. Marine Ecology.** (5). Relationship of marine organisms to their environment, effects of temperature, salinity, light, nutrient concentration, currents, food, and oxygen and carbon abundance and distribution of marine organisms. PREREQUISITES: 16 hours of biology including general zoology, general botany, and invertebrate zoology.

***6052. Salt Marsh Plant Ecology.** (4). Botanical aspects of local marshes. Plant identification, composition, structure, distribution, and development of coastal marshes. Biological and physical interrelationships. Primary productivity and relation of marshes to estuaries and associated fauna. PREREQUISITES: General botany, plant taxonomy, plant physiology, and general ecology or consent of instructor.

***6200. Marine Botany.** (4). Local examples of the principal groups of marine algae and maritime flowering plants, treating structure, reproduction, distribution, identification and ecology. PREREQUISITE: Ten hours of biology, including introductory botany, or consent of instructor.

***6300. Coastal Vegetation.** (3). General and specific aspects of coastal vegetation, with emphasis on local examples. PREREQUISITES: 10 hours of biology, including general botany.

***6500. Marine Microbiology.** (5). Role of microorganisms in the overall ecology of the oceans and estuaries. PREREQUISITES: General microbiology and environmental microbiology or consent of instructor.

***6600. Marine Vertebrate Zoology and Ichthyology.** (6). Marine Chordata, including lower groups and the mammals and birds, with most emphasis on the fishes. PREREQUISITES: 16 hours of zoology including comparative anatomy or consent of the instructor.

***6610. Early Life History of Marine Fishes.** (4). Reproductive strategies and developmental processes of marine fishes. Temporal and spatial distribution patterns, population dynamics, and ecological interactions of fish eggs and larvae. Methods of sampling and identifying eggs and larvae. PREREQUISITES: Ichthyology, fisheries biology, ecology, and/or consent of Instructor.

***6646. Marine Fisheries Management.** (4). Overview of practical marine fishery management problems. PREREQUISITES: Consent of instructor.

***6700. Behavior and Neurobiology of Marine Animals.** (4). Behavior, neuroanatomy, and neurophysiology of marine animals; emphasis on the neural mechanisms underlying behavior of selected invertebrates, fishes, birds and mammals. PREREQUISITES: 16 hours of zoology and or psychology or consent of instructor.

***6800. Marine Invertebrate Zoology.** (6). Important free-living, marine and estuarine invertebrates of northeastern Gulf of Mexico; emphasis on structure, classification, phylogenetic relationships, larval development and functional processes. PREREQUISITES: 16 hours of zoology including introductory invertebrate zoology.

***6844. Parasites of Marine Animals.** (6). Parasites of marine animals with emphasis on morphology, taxonomy, life histories and host-parasite relationships. Lecture, laboratory and field work. PREREQUISITES: General parasitology or consent of the instructor.

***6850. Fauna and Faunistic Ecology of Tidal Marshes.** (4). Taxonomy, distribution, trophic relationships, reproductive strategies and adaptation of tidal marsh animals; emphasis on those occurring in northern Gulf marshes. PREREQUISITES: 16 hours of biology and junior standing or consent of instructor.

*†7093. **Problems In Zoology.** (3-6). Supervised research on specific problems in marine zoology for graduates. **PREREQUISITE:** BIOL 6800 or 6600.

†Grades of S, U, or IP will be given.

CHEMISTRY

HENRY A. KURTZ, Ph.D., *Chair*
Room 210, J.M. Smith Building

PETER K. BRIDSON, Ph.D., *Coordinator*
of Graduate Studies

I. The Department of Chemistry offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees with a major in chemistry. Concentrations are available in inorganic, analytical, organic, and physical chemistry. Related courses may be taken in other departments, including physics, mathematics, geology, biology, and engineering and in fields other than the student's major within the Department of Chemistry.

II. M.S. Degree Program

A. Program Admission and Prerequisites

Prospective students, in addition to meeting the requirements for admission to The Graduate School, are required to present as a prerequisite for admission a satisfactory record of undergraduate work in chemistry; normally, six semester hours of chemistry will be required. Students who are deficient in undergraduate work may be admitted and the deficiencies removed without graduate credit.

B. Program Requirements

1. **Diagnostic Examinations**—In the week preceding registration for each semester, a series of four examinations in the specializations of physical, inorganic, organic, and analytical chemistry will be administered to incoming graduate students. The purpose of these examinations is to aid in the advising of entering students, and to insure that the students have a broad enough background to undertake a specialized advanced degree program. These examinations will be comparable to final examinations given in the master's program at The University of Memphis in the courses CHEM 3312 (organic), CHEM 3411 (physical), CHEM 4111/6111 (inorganic), and CHEM 4220/6220 (analytical instrumentation). Any of the four parts not passed must be repeated each time that it is offered. A student can elect to enroll in the course designated above in lieu of repeating a part of the examination. A grade of B or better must be obtained to satisfy the requirement. Students who have not satisfied the requirement for each part after the third opportunity will be dropped from the Master's or Ph.D. program. Students are advised against, but not prohibited from, taking a graduate course in an area in which they failed the examination before they have successfully removed the deficiency.

2. **Course Work Requirements**—The third semester hour total required is subject to the following restrictions.

- Electronic Structure and Symmetry (7411/8411) is required of all graduate students. Six hours must be selected from two different specializations utilizing some combination of the following courses: Inorganic 7111/8111, Analytical 7211/8211, Organic 7311/8311.
- A maximum of six semester hours of Chemistry 8000 (Research and Dissertation/Thesis) and/or Chemistry 9000 (Doctoral Research and Dissertation) can be applied to the third semester hour requirement.
- A maximum of three semester hours of Chemistry 7910/8910 (Special Problems in Chemistry) may be counted toward the third semester hour requirement.
- A maximum of three semester hours of Chemistry 7913/8913 (Seminar) can be used to meet the third semester hours required.
- A maximum of six semester hours credit can be granted for graduate courses successfully completed at other accredited institutions.

3. **Cumulative Examinations**—The student must begin the cumulative examinations by the beginning of the third semester providing the core course in the student's major area has been successfully completed. These are described in the summary of the administration of the graduate program. A student pursuing the master's degree is permitted to take a maximum of eight tests and must obtain a total of at least six points. Any student who has not amassed six points at the completion of eight tests is automatically terminated from the master's degree program.

4. **Seminar**—Participation in seminar is required during each semester of residence (excluding summer terms). Each student is required to present at least one formal seminar before graduation.

5. **The Advisory Committee**—Upon admission to the Graduate School, the student will be advised by the Department's Graduate Studies Committee. A student must choose a major professor before the end of the second semester following enrollment. The major professor, in consultation with the student, will recommend to the department chair faculty members to be appointed to the student's advisory committee. This committee which is appointed as soon as the student has selected a major professor, must be composed of at least three members, with the major professor serving as chair. Upon appointment, the committee will review the student's progress to date, and outline an appropriate program tailored to the student's individual interests to permit fulfillment of the degree requirements.

6. Thesis Option

a. **Research Prospectus**—After selecting the research problem on which the thesis is to be based the student will prepare a Research Prospectus to be presented orally to the Advisory Committee in an open meeting, and in a written form to the Graduate Studies Committee. The prospectus must be presented before the end of the second year.

b. **Progress Report**—Each subsequent year until the year of graduation the student will prepare a research progress report to be presented orally to the Advisory Committee and in a written form to the Graduate Studies Committee.

c. **Thesis**—Each student must submit a thesis acceptable to the student's advisory committee. The thesis can be based on work done for CHEM 8000 or 9000, for which a maximum of six credit hours can be applied to the degree requirement.

7. **Non-Thesis Option**—If a non-thesis program is selected, a student must prepare a detailed report in the form of a review or proposal, based on literature research. Three hours credit for CHEM 7910 will be earned.

8. **Comprehensive Examination**—A final oral examination on the student's thesis or report and related material will be administered by the student's advisory committee after completion of all other requirements. This examination will be held seven or more days after the student has distributed copies of the thesis or report to the members of the advisory committee, which must be done at least one month before the end of the semester in which the student expects to graduate. If the final oral examination is unsatisfactory it must be repeated within one year; it may not be repeated more than once.

9. **Retention**—A student pursuing the Master's degree program may be terminated for any of the following reasons:

- Failure to demonstrate proficiency on each part of the diagnostic examinations (See Section 1).
- Failure to maintain a grade point average of 3.0 or above. A student who has a cumulative grade point average below 3.0 will be placed on probation. Continuation in graduate school must be approved by the Dean of the Graduate School. Any person whose continuation is denied may appeal the decision to the Council for Graduate Studies and Research.
- Failure to accumulate the requisite number of points on the departmental cumulative examinations (See Section 3).
- Failure to complete the degree requirements within six years of initial enrollment in the graduate program.
- Failure to satisfy the advisory committee on the final oral examination (See Section 8).

III. Ph.D. Degree Program

A. Program Admission

See M.S. admission requirements.

B. Program Requirements

1. **Diagnostic Examinations**—See M.S. diagnostic examination requirements.

2. **Course Work Requirements**—The doctorate degree program includes the requirement of the satisfactory completion of a minimum of 72 semester hours of graduate credit. The 72 hour total is subject to the following restrictions:

- Electronic Structure and Symmetry (7411/8411) is required of all graduate students. Six hours must be selected from two different specializations utilizing some combination of the following courses: Inorganic 7111/8111, Analytical 7211/8211, Organic 7311/8311.
- A maximum of 30 hours credit for CHEM 8000

(Research and Dissertation/Thesis) and CHEM 9000 (Doctoral Research and Dissertation) combined can be applied toward the 72 hour total.

c. A maximum of 12 hours of CHEM 7910/8910 (Special Problems in Chemistry) may be credited toward the total hour requirement.

d. A maximum of 12 hours of course work may be included in a field related to chemistry (physical or biological sciences, mathematical sciences, or engineering). Courses taken in related areas must be numbered 6000 or above.

e. A maximum of three semester hours of CHEM 7913/8913 (Chemistry Seminar) can be used to meet the 72 semester hours required.

f. A maximum of 30 hours of graduate course credit completed at the university or other accredited institution (including credit applied on an M.S. degree) may be applied to the 72 hour requirement subject to the approval of the student's advisory committee and the Department's Graduate Studies Committee. A minimum of 18 hours in graduate courses other than CHEM 7910/8910, CHEM 7913/8913, and CHEM 9000/9000 must be completed at the university.

3. **Residence**—Of the total semester hour requirement, a minimum of 24 hours must be earned while the student is at The University of Memphis. This requirement cannot be met wholly by attendance at Summer Sessions, and must include at least one academic year of full-time student status.

4. **Cumulative Examinations**—The student must begin the cumulative examinations by the beginning of the third semester providing the core course in the student's major area has been successfully completed. These examinations and a description of the summary of the administration of the graduate program. A student pursuing the Doctor's degree is permitted to take a maximum of eight tests and must obtain a total of at least twelve points. Any student who has not amassed twelve points at the completion of eight tests is automatically terminated from the Doctor's degree program.

Students who enter the Ph.D. program and already hold the M.S. degree in chemistry must begin taking the cumulative examinations at the first opportunity after initial enrollment if a satisfactory score is made on the diagnostic examinations.

5. **Seminar**—Participation in Seminar is required during each semester of residence (excluding summer terms). A maximum of three semester hours of credit for CHEM 7913/8913 is allowable toward the 72 semester hours required for graduation. Each student is required to present at least one formal seminar before graduation.

6. **The Advisory Committee**—Upon admission to the Graduate School, the student will be advised by the Department's Graduate Studies Committee. A student must choose a major professor from the graduate faculty before the end of the second semester following enrollment. The major professor, in consultation with the student, will recommend to the department chair faculty members to be appointed to the student's Advisory Committee. This committee, which is appointed as soon as the student has selected a major professor, must be composed of at least five members, with the major professor serving as chair. Of the members of this committee, at least one is to be from a different area of specialization than that in which the student intends to work. Upon appointment, the committee will review the student's progress to date and outline an appropriate program tailored to the student's interests to enable fulfillment of the degree requirements.

A student who enters the Ph.D. program and already holds the M.S. degree in chemistry must select a major professor during the first semester in residence, or upon completion of the diagnostic examinations.

In the event that a student changes major professors, a new Advisory Committee must be appointed.

7. **Admission to Candidacy**—In order to apply for candidacy, the student must have an Advisory Committee and must have taken the Graduate Record Examinations, and must have successfully completed the departmental cumulative examination requirement. The cumulative examinations collectively are considered to be equivalent to the qualifying examination required by the Graduate School. The test scores, transcripts, and other pertinent data will be examined by the student's Advisory Committee, and their recommendation, with the approval of the Department Chair, will be forwarded to the Graduate Dean.

8. **Research Prospectus**—After selecting the research problem on which the dissertation is to be based, the student will prepare a Research Prospectus to be presented orally to the Advisory Committee in an open meeting, and in a written form to the Graduate Studies Committee. The Prospectus must be presented before the end of the second year.

A student who enters the Ph.D. program having previously obtained the M.S. degree in chemistry is required to present a Research Prospectus before the completion of two semesters. A student who changes major professors must present a new Research Prospectus within one semester after the change is made.

9. Progress Report—Each subsequent year until the year of graduation the student will prepare a research progress report to be presented orally to the Advisory Committee, and in a written form to the Graduate Studies Committee.

10. Doctoral Research and Dissertation—Registration for nine semester hours of CHEM 9000 and CHEM 8000 combined is required of all doctoral candidates before the dissertation will be considered.

11. Comprehensive Examination—A final oral examination on the student's dissertation and related material will be administered by the student's Advisory Committee after completion of all course requirements and the dissertation. This examination will be held two weeks or more after the student has distributed copies of the dissertation to the members of the Advisory Committee; which must be done at least five weeks before the end of the semester in which the student expects to graduate. If the final oral examination is unsatisfactory, it must be repeated within one year. It may not be repeated more than once.

12. Retention—A student pursuing the Doctor's degree program may be terminated for any of the following reasons:

- Failure to satisfy each part of the diagnostic requirements. (See Section 1).
- Failure to maintain a grade point average of 3.0 or above. A student who has a cumulative grade point average below 3.0 will be placed on probation. Continuation in graduate school must be approved by the Dean of the Graduate School. Any person whose continuation is denied may appeal the decision to the University Council for Graduate Studies and Research.
- Accumulation of more than six hours of graduate credit with grades of C or below.
- Failure to accumulate the requisite number of points on the departmental cumulative examinations. (See Section 4).
- Failure to satisfy the Advisory Committee on the final oral examination. (See Section 11).

E070 CHEMISTRY (CHEM)

†**5601. Workshop in Chemical Demonstrations.** (3). Preparing and presenting demonstrations and activities to illustrate chemical principles, processes and properties for K-8 classrooms. *Six hours lecture/lab per week.* PREREQUISITE or COREQUISITE: K-8 teaching experience or permission of instructor.

†**5602. Workshop in Environmental Chemistry.** (3). Introduction to environmental chemistry principles and issues for teachers; sources, reactions, and fates of chemical species in the air, water, and soil. *Three lecture hours per week.* PREREQUISITE: CHEM 1132 or 1102 or permission of instructor.

6001. Environmental Chemistry. (3). Chemical phenomena occurring in soil, atmospheric and aquatic environments; consideration of natural resources and environment. *Three lecture hours per week.* PREREQUISITE: CHEM 3311.

6101. Inorganic Chemistry Laboratory. (1). Experimental techniques of inorganic synthesis and physical methods for characterization of inorganic and organometallic compounds. *Three laboratory hours per week.* PREREQUISITE or COREQUISITE: CHEM 4111-6111.

6111. Inorganic Chemistry. (3). Theoretical and applied inorganic chemistry. Stress on the relationship of structure and bonding to the properties of elements and compounds. Topics include introductory molecular orbital theory, coordination compounds and organometallics, ligand field theory, nonaqueous solvent systems, and reaction mechanisms. *Three lecture hours per week.* PREREQUISITE: CHEM 3412, or permission of the instructor

6180-99. Special Topics in Inorganic Chemistry. (1-3). Topics are varied and announced in *Schedule of Classes.*

6220. Advanced Instrumental Analysis. (4). Advanced topics in electrochemical, spectroscopic, and chromatographic methods, and an introduction to electronic and optical principles of chemical instru-

mentation. *Two lecture, six laboratory hours per week.* PREREQUISITE: CHEM 3412.

6280-99. Special Topics in Analytical Chemistry. (1-3). Topics are varied and announced in *Schedule of Classes.*

6315. Organic Medicinal Chemistry. (3). Introduction to principles of medicinal chemistry; structure, synthesis, and biochemical mechanism of action of major drug classes. *Three lecture hours per week.* PREREQUISITE: CHEM 3312.

6380-99. Special Topics in Organic Chemistry. (1-3). Topics are varied and announced in *Schedule of Classes.*

6480-99. Special Topics in Physical Chemistry. (1-3). Topics are varied and announced in *Schedule of Classes.*

6501. Biochemistry Laboratory. (1). (Same as BIOL 6503). Investigation of physical and chemical properties of compounds of biological interest by common laboratory techniques. Assay of enzymes and enzyme kinetics are stressed. *Three laboratory hours per week.* PREREQUISITES: CHEM 3302 or 3303 and CHEM 3312. PREREQUISITE OR COREQUISITE: CHEM 6511.

6502. Biochemistry Laboratory II. (1). (Same as BIOL 6504). Biochemical laboratory techniques; emphasis on fractionating biological samples and measuring metabolic activity. *Three laboratory hours per week.* PREREQUISITE: CHEM 6511.

6511. Biochemistry. (3). (Same as BIOL 6511). Chemistry of amino acids and proteins as related to their properties in biochemical systems. Enzymology, including kinetics and conformation studies. Coenzymes and their functions. The chemistry of carbohydrates, lipids and nucleotides. PREREQUISITE: CHEM 3312.

6512. Biochemistry. (3). (Same as BIOL 6512). A continuation of CHEM 6511. Metabolism of carbohydrates, amino acids and nucleotides. Biochemistry of DNA and RNA, including their relationship to the biosynthesis of proteins. Metabolic control. PREREQUISITE: CHEM 6511.

6580-99. Special Topics in Biochemistry. (1-3). Topics are varied and announced in *Schedule of Classes.*

6601. Chemical Demonstrations. (3). Preparing and presenting demonstrations and activities to illustrate chemical principles, processes, and properties for secondary and post-secondary classes. *One lecture and four laboratory hours per week.* PREREQUISITE: CHEM 3302, CHEM 3312 or permission of instructor.

6602. Teaching High School Chemistry Laboratory. (3). Selection, modification, evaluation, and teaching of instructional chemistry experiments in high schools, including planning pedagogical goals, laboratory organization and safety, purchasing supplies, and student evaluation. *Two lecture and two laboratory hours per week.* PREREQUISITE: CHEM 3302, CHEM 3312 or permission of instructor.

6604. Instrumental Methods. (3). Analytical instrumental techniques including molecular spectroscopy, chromatography, atomic spectroscopy, and electrochemical analysis. *One lecture, six laboratory hours per week.* PREREQUISITES: CHEM 3201, 3211, 3312 or permission of instructor.

6911. Chemical Literature and Seminar. (1). Use of literature, writing of technical reports, and oral presentation of investigative reports. *One lecture hour per week.* PREREQUISITE: Consent of instructor.

7111-8111. Systematic Inorganic Chemistry. (3). Survey of inorganic chemistry, including electronic structure, bonding, stereochemistry, symmetry, and the physical and chemical properties of the elements and their compounds.

7112-8112. Structural Inorganic Chemistry. (3). Study of physical methods used to determine structure, and applications of group theory to chemical problems.

7211-8211. Advanced Analytical Chemistry I. (3). Techniques of analytical chemistry including statistics with computer applications, chromatography, atomic spectroscopy, and electrochemistry.

7212-8212. Advanced Analytical Chemistry II. (3). Advanced treatment of analytical topics.

7311-8311. Advanced Organic Chemistry. (3). Physical approach to organic reaction mechanisms; reactive intermediates, aromaticity, and pericyclic reactions. Introduction to advanced spectroscopic techniques and synthetic philosophy.

7312-8312. Synthetic Organic Chemistry. (3). Principles of synthesis of complex organic molecules.

7411-8411. Electronic Structure and Symmetry. (3). Basic quantum chemistry with applications to simple systems. Group theory and its applications. Molecular orbital theory including Hückel, SCF-LCAO-MO, and Qualitative MO methods.

7413-8413. Molecular Spectroscopy. (3). Spectroscopy of molecular systems including infrared, UV, visible, microwave, Raman, NMR, and ESR; theory for obtaining molecular information from different types of spectroscopy.

7414-8414. Advanced Quantum Chemistry. (3). Advanced treatment of topics in quantum chemistry with emphasis on electronic structure theories.

†**7910-8910. Special Problems in Chemistry.** (1-12). Individual investigation and report under the guidance of the student's major adviser.

†**7913-8913. Chemistry Seminar.** (1). Formal meetings, presentation, and discussion of current topics of interest. Students, faculty and visiting scientists participate. Required of all regularly enrolled graduate students. May be repeated for a maximum of 3 credits.

†**8000. Research and Dissertation/Thesis.** (1-6). An original investigation undertaken with the supervision of a member of the graduate staff. The investigation will be the basis of a dissertation or thesis.

8100-09. Special Topics in Inorganic Chemistry. (1-3). Lectures and conferences covering selected areas of current interest (including equilibrium, titrimetric, electroanalytical, and spectral methods, separation and radio-chemical techniques, microanalysis, statistics and data analysis, and electrode kinetics). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

8200-09. Special Topics in Analytical Chemistry. (1-3). Lectures and conferences covering selected areas of current interest (including equilibrium, titrimetric, electroanalytical, and spectral methods, separation and radio-chemical techniques, microanalysis, statistics and data analysis, and electrode kinetics). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

8300-09. Special Topics in Organic Chemistry. (1-3). Lecture and conferences covering selected areas of current interest (including heterocyclic chemistry, organometallic compounds, organosulfur compounds, alkaloids, steroids, terpenes, photochemistry, biosynthesis, stereochemistry, carbohydrates, new synthetic methods, high polymers, and advanced physicalorganic chemistry). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

8400-09. Special Topics in Physical Chemistry. (1-3). Lectures and conferences covering selected areas of current interest (including non-aqueous solutions, surface chemistry, x-ray crystallography, theoretical spectroscopy, nuclear chemistry, molecular structure of macromolecules, colloid chemistry, statistical thermodynamics, esr, and nmr). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

8500-09. Special Topics in Biochemistry. (1-3). Lectures and conferences covering selected areas of current interest (including enzymology, protein and nucleic acid chemistry, physical chemistry of biochemical macromolecules, lipid, carbohydrate, and amino acid metabolism, biochemical energetics, and metabolic regulation). May be repeated for a for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

†**9000. Doctoral Research and Dissertation.** (1-10). An original investigation undertaken with the supervision of a member of the graduate staff to be the basis of a doctoral dissertation and a contribution

to the chemical literature. (Maximum amount of semester credits is 30).

† Grades of S, U, or IP will be given.

CRIMINOLOGY AND CRIMINAL JUSTICE

JERRY R. SPARGER, Ph.D., *Chair*
Room 405, Mitchell Hall

W. RICHARD JANIKOWSKI, J.D.,
Coordinator of Graduate Studies

I. The Department of Criminology and Criminal Justice offers the Master of Arts degree with a major in Criminal Justice. The program is designed to provide a wide range of individual specialization with curricula specifically tailored to each student's undergraduate preparation, work experience, and career objectives. Coursework emphasizes the institutions and the processes of the criminal justice system, with a scientific approach to the analysis of organizational and management issues in criminal justice. The program stresses a broad understanding of the social and behavioral sciences; comprehension of the general legal issues important to criminal justice administration; development of methodological tools and skills for research and program evaluation; and acquisition of knowledge about administrative and managerial issues in criminal justice organizations. The program is based on an interdisciplinary approach, linking the criminal justice system with other academic disciplines to develop in students an awareness of other theoretical perspectives and bodies of knowledge.

II. M.A. Degree Program

A. Program Admission

Admission to the program is competitive. To be considered for admission, the applicant must meet the following minimum criteria:

1. A baccalaureate degree from an accredited college or university
2. A grade point average of at least 2.5 (4-point scale) in all undergraduate course work
3. An acceptable score on the aptitude section of the Graduate Record Examination or Miller Analogies Test.
4. An interview may be required for admission.

B. Program Requirements

1. A total of 30 semester hours of graduate work including the completion and defense of a thesis, or 36 semester hours of graduate work without a thesis

2. Satisfactory completion of the following core curriculum:

- CJUS 7100. Proseminar in the Criminal Justice System
- CJUS 7120. Criminal Justice Policy Formulation and Analysis
- CJUS 7160. Seminar in Criminal Justice Administration
- CJUS 7570. Legal Issues in Criminal Justice Administration
- CJUS 7110. Individual Directed Study or C-JUS 7996 Thesis

3. A minimum of 18 semester hours of coursework in Criminal Justice, including the core courses

4. A minimum of 25 hours of coursework at the 7000 level, including thesis hours. At least fifteen semester hours of 7000 level courses must be from Criminology and Criminal Justice. At the discretion of the graduate coordinator, nine hours of graduate work outside Criminology and Criminal Justice may be applied to the Master of Arts with a major in Criminal Justice. For students who have an undergraduate major in criminal justice, coursework outside the department may be increased to 18 semester hours.

5. Each student must demonstrate a high level of writing proficiency and analytical skill by satisfactorily completing either an Individual Directed Study which results in a major area paper or by completing a thesis.

6. Satisfactory performance on a comprehensive examination.

7. Students will be allowed no more than 6 hours of credit in non-classroom courses such as internships individual directed studies, and reading courses.

E075 CRIMINOLOGY AND CRIMINAL JUSTICE (CJUS)

6010-19. Special Topics in Criminal Justice. (1-3). Topics are varied and announced in *Schedule of Classes*.

6160. Forensic Sciences. (3). Forensic specialties will be discussed in terms of their history, the scientific rationale upon which each is based, and the problems that may compromise accuracy or validity; introduction to field techniques and analysis of evidence.

6180. Corporate and White-Collar Crime. (3). Organizational and occupational crime in comparison to other types of criminality; emphasis on causes, frequency, control, and social impact.

6190. Terrorism: Social and Legal Perspectives. (3). Theoretical and ideological aspects of practice of and response to international and domestic terrorism; terrorism as crime from political, social, economic, historical, and legal perspectives.

6520. Substantive Criminal Law. (3). Substance of the crime, including common-law sources and basic principles; types of offenses, responsibility, justification and excuse, and related areas.

6531. Issues In Constitutional Rights. (3). Topical issues in constitutional law related to criminal defendants and incarcerated; exclusionary rule and its alternatives, application of 1st Amendment to criminal law, legal status of confined persons (discipline, legal services, communications, medical aid), liability of correctional and police officials and civil and criminal legal techniques for protecting and vindicating constitutional rights, such as *habeas corpus* and 42 USC 1983.

6533. Juvenile Delinquency: Theory and Process. (3). Theories of juvenile delinquency, gang activities, and status offenses; history, organization, programs, and procedures of agencies charged with control and prevention of juvenile delinquency including police, juvenile units, juvenile courts, and juvenile correctional agencies.

7100-8100. Proseminar In the Criminal Justice System. (3). Major functional components of criminal justice system from historical, philosophical, and systems perspective; analysis of interrelationships among components; impact of social and political forces on roles and functions of criminal justice agencies; review of research on operational goal attainment.

†7110-8110. Individual Directed Study. (1-4). Individual directed research/readings in special areas of interest in the field of criminal justice. PREREQUISITE: Permission of Coordinator of Graduate Studies. May be repeated for a maximum of 4 credit hours.

7120-8120. Criminal Justice Policy Formulation and Analysis. (3). Theories, models, and methods of policy formulation and evaluation in criminal justice organizations; emphasis on utilizing social science methodologies in decision-making process and administrative problem solving within legal and budgetary constraints.

7128-8128. Research Methods in Criminal Justice. (3). Principles of social science research as applied to the study of the criminal justice system. Sampling techniques and research strategies. Emphasis on the development of research skills enabling the student to conduct an independent research project.

7130-8130. Crime Analysis and Criminal Behavior. (3). In-depth study of "normal crimes," the analysis of the characteristics of the criminal, the victim, and the setting for specified offenses. The typical demographic and ecological elements of each type of crime with the purpose of providing a framework for analysis and comparison.

†7140-8140. Graduate Colloquium. (3). Presentations of scholarly activity and examination of classical and contemporary issues in criminology and criminal justice. Required of all graduate assistants. PREREQUISITE: Appointment as a graduate assistant in Criminology and Criminal Justice. May be repeated. Credit not applicable to major.

†7141-8141. Reading for Comprehensives. (1-6). Arranged on an individual basis for Criminology and Criminal Justice graduate students only. PREREQ-

UISITES: Student must have completed required course work or be in the last semester of required course work. Credit not applicable to major.

†7150-8150. Internship in Criminal Justice (3-6). Experience in a criminal justice setting through assignment to an enforcement, judicial, or correctional agency under joint supervision of agency officials and university faculty. PREREQUISITE: Permission of Coordinator of Graduate Studies.

7160-8160. Seminar in Criminal Justice Administration. (3). Theories of organization with emphasis on structures, principles, techniques, and processes of criminal justice agencies; factors affecting behavior within such organizations; motivation, leadership, group dynamics, conflict management, unionization, selection, training, performance evaluation, organizational change, and political factors in public agency operation.

7190-99-8190-99. Special Topics in Criminal Justice. (3). Systematic and comprehensive examination of important and timely issues and development in the field of criminal justice. May be repeated for a maximum of six hours.

7570-8570. Legal Issues in Criminal Justice Administration. (3). Impact of legal issues on administration of criminal justice agencies with particular emphasis on torts, federal civil rights legislation, employee rights, EEOC and OSHA regulations.

7510-8510. Law and Society. (3). Examination of law as a system of control and as a mechanism for the resolution of conflict. Relationship of law to political, economic, and social systems critically analyzed; the development of the legal profession.

7523-8523. The Concept of Criminal Law. (3). Social foundation and principles on which our system of criminal law is based.

7996. Thesis. (1-6).

† Grades of S, U, or IP will be given.

ENGLISH

GUY BAILEY, Ph.D., *Chair*
Room 467, Patterson Hall

THOMAS C. CARLSON, Ph.D.,
Coordinator of Graduate Studies

I. The Department of English offers programs of study leading to the Master of Arts degree and the Master of Fine Arts degree. Entering students will consult with a departmental adviser to plan their course of study. Students in the M.A. program will choose one concentration from the four offered: Language and Linguistics, Literature, Writing (Creative Writing or Professional Writing), or English as a Second Language.

II. M.A. in English Degree Program

A. Program Prerequisites

A minimum of twelve (12) semester hours in upper division English courses, with a minimum grade point average of 2.5 in those courses. A score satisfactory to the Department on the Miller Analogies Test or the Graduate Record General Examination.

B. Program Requirements

1. A total of thirty-three (33) semester hours of coursework for the student who elects not to write a thesis or a total of thirty (30) semester hours of coursework for the student who writes a thesis.

2. Two graduate courses (six semester hours) in literature.

For those in Creative Writing, an additional graduate contemporary literature course (3 semester hours) chosen from the following is required: 7029-39 (where applicable), 7462, 7464, 7466.

3. Students must complete the following minimum coursework, beyond the requirement in 2, in at least one of these concentrations: Language and Linguistics 12 hours; Writing (Creative or Professional) 12 hours; Literature 15 hours (excluding English 7100); English as a Second Language 18 hours.

The Writing concentration (Creative or Professional) requires a 3-hour or a 6-hour thesis.

Professional Writing students will complete their twelve hours as follows: ENGL 7806 and 7809, and two courses selected from the following: 6602, 7003, 7802, 7803, 7805, 7807, 7808, or 7810.

4. Oral comprehensive examination for students who write a thesis, and a written comprehensive examination for those who do not. Students should contact the English Graduate Office for examination format and dates.

5. Reading knowledge of French, German, Latin, Spanish, Italian, Russian or Greek. Proficiency may be demonstrated in a variety of ways (inquire in English Graduate Office for options). Other languages may be substituted if they are shown to be relevant to the student's course of study. Substitution of proficiency in computer languages (12 semester hours or equivalent) may be considered by the Graduate Studies Committee for Writing concentration students, especially those in Professional Writing. Students intending to pursue a Ph.D. in English at another university are advised to develop a reading competency in at least one of the following: French, German, Latin, or Greek.

6. Thesis (English 7996: 3 or 6 hours)—optional, except for the concentration in Writing (Creative or Professional).

7. An average of 3.00 in all graduate English courses.

8. Each graduate teaching assistant in the Department of English must enroll in English 7003 at the first opportunity.

III. M.F.A. in Creative Writing Degree Program

The Master of Fine Arts in Creative Writing provides students in poetry and fiction. In addition to writing workshops, students take courses in literature and in the theory of writing, including English language and linguistics. A book-length thesis of publishable quality is required; it will be directed by a member of the M.F.A. faculty. The M.F.A. requires 48 graduate semester hours, with a 3.00 grade point average in all graduate courses.

A. Admission

For admission to the M.F.A. program: A portfolio of writing samples in the applicant's chosen genre (at least 20-25 pages of fiction or ten poems), demonstrating a potential for development to a professional standard of writing. The writing sample will be evaluated by a committee of the M.F.A. faculty. The committee will recommend admission of those applicants with the highest demonstrated talent. Baccalaureate degree in English or in baccalaureate is in another field, twelve (12) semester hours in upper division English. Miller Analogies Test (minimum score: 36) or Graduate Record General Examination (minimum verbal score: 450, minimum combined score: 750). Deadlines: March 15 for the following fall semester admission and October 15 for following spring semester.

B. Program Prerequisites

A minimum of twelve (12) semester hours in upper division English courses with a minimum grade point average of 2.5 in these courses.

C. Transfer Credit

Any applicant who holds an M.A. degree in English from another institution may transfer up to a maximum of twenty-four (24) semester hours in English earned for that degree to apply toward the M.F.A. degree. A student's adviser will insure that the combination of transfer credits and courses taken in the program has appropriate breadth.

D. Core Requirements

1. *Writing Workshops and Forms Courses*—A total of fifteen (15) semester hours is required. Three hours will be selected from English 7602 and 7603, each repeatable to 9 hours. In addition, a student is required to take one or more class (English 7471 or 7472) in the student's chosen genre and one cross-genre course, either forms (7471 or 7472) or a workshop (7602 or 7603).

2. *Literature*—Twenty-one (21) semester hours, elected from English 7029-39 (literature or criticism topics and approval of the Director of Creative Writing and the Coordinator of Graduate Studies), 7211, 7230, 7232, 7233, 7242, 7244, 7254, 7256, 7264, 7265, 7266, 7276, 7278, 7280, 7291, 7292, 7293, 7323, 7324, 7391, 7392, 7393, 7411, 7412, 7441, 7442, 7451, 7462, 7464, 7466.

3. *Theory of Writing and English Language/Linguistics*—Six (6) semester hours selected from English 7020-29 (theory of writing and English Language/Linguistics topics), 7100 (theory of writing and/or English Language/Linguistics topics and approval of the Director of Creative Writing and the Coordinator of Graduate Studies), 7452, 7473, 7474, 7501, 7511, 7512, 7513, 7514, 7515, 7701, 7702, 7801, 7802, 7803, and 7805. The student's adviser will insure that the selections have appropriate breadth.

4. Reading knowledge of a modern foreign language.

5. Thesis (English 7996), six (6) semester hours.

6. Oral review of thesis.

E080 ENGLISH (ENGL)

†5500. *Language Skills for Internationals*. (3).

6602. *Advanced Composition*. (3). Principles involved in writing clear expository prose. Emphasis on application of these principles; analysis of readings and of student's writing Repeatable to maximum of 6 hours.

7000. *Methods and Contexts of Literary Scholarship*. (3).

7001. *Language and Composition*. (3). Studies in the craft of composition, with focus upon sound editorial practice and the writing and analysis of the varieties of expository prose.

7002. *Topics in Writing*. (3). Readings, lectures, and exercises in theory of written composition, with emphasis on teaching of writing and on development of writing programs.

7003. *Applied Theory and Practice in English Composition in College*. (3). Designed for graduate assistants teaching English 1101. Emphasis on the ways and techniques of teaching rudiments of English composition on college level. Required of and restricted to graduate teaching assistants.

†7004. *Internship for Graduate Teaching Assistants*. (3). Supervision of and consultation with English teaching assistants. Credit not applicable to major. PREREQUISITES: ENGL 7003 or equivalent plus appointment as graduate teaching assistant in English. Repeatable.

†7005. *Reading for Comprehensives*. (3). Arranged on an individual basis for English graduate students only. Credit not applicable to major. PREREQUISITE: Student must have completed required course work toward degree or be in the last semester of required course work. Repeatable.

†7006. *The English Profession*. (3). Presentations relating to the profession of college teaching, including methods and means of research and publication in different fields of English. Credit not applicable to major. Repeatable to six hours with variable topics in fall and spring.

7020-39. *Special Topics in English*. (3). Topics are announced in *Schedule of Classes*.

7100. *Independent Study*. (1-6). Focuses on a selected topic dealing with language study or a literary form, theme, figure, or movement. Topic chosen by student and approved by student's adviser and Department Chair.

7211. *Medieval Literature*. (3).

7230. *Chaucer*. (3). (6231).

7232. *Shakespeare's Tragedies*. (3).

7233. *Shakespeare's Comedies and Histories*. (3).

7242. *English Renaissance Literature*. (3). (7212).

7244. *Elizabethan and Jacobean Drama*. (3).

7254. *English Literature of the Seventeenth Century*. (3). (7213).

7256. *Milton*. (3). (6234).

7264. *English Poetry and Prose, 1660-1800*. (3).

7265. *Eighteenth Century British Novel*. (3).

7266. *English Drama from 1660 to 1800*. (3).

7276. *English Literature of the Romantic Period*. (3). (7221).

7278. *Victorian Literature*. (3). (7222).

7280. *Nineteenth Century British Novel*. (3).

7291. *Modern British Novel*. (3).

7292. *Modern British Poetry*. (3).

7293. *Modern British Drama*. (3).

7323. *American Literature to 1865*. (3). (7321).

7324. *American Literature, 1865-1914*. (3).

7391. *Modern American Novel*. (3).

7392. *Modern American Poetry*. (3).

7393. *Modern American Drama*. (3).

7411. *European Literature to Renaissance*. (3). (6411).

7412. *European Literature since Renaissance*. (3). (6412).

7441. *European Fiction*. (3). Movements and writers important to development of Continental fiction from late eighteenth century to present. (6441).

7442. *Modern European Drama*. (3).

7451. *Women and Literature*. (3). Literature and criticism by and about women. (6451).

7452. *Biography: Process and Text*. (3).

7462. *Contemporary British and/or Commonwealth Literature*. (3). Authors, works, genres, and literary styles in development of contemporary British and Commonwealth literatures. (7226).

7464. *Contemporary American Literature*. (3). Authors, works, genres, and literary styles in development of contemporary American literature. (7225).

7466. *Contemporary World Literatures in Translation*. (3). Contemporary non-English fiction in translation, primarily from non-Western European cultures; focus on major movements and writers. (7224).

7471. *Forms of Fiction*. (3). A study of how fiction works through analyzing the short story, the novella, and the novel with attention to historical developments. (6605).

7472. *Forms of Poetry*. (3). A study of meters, forms, and types of poetry in English with attention to the principal traditions and critical ideas associated with the writing of verse in English. (6604).

7473. *Verbal/Visual Texts*. (3).

7474. *Cultural Texts*. (3).

7501. *History of the English Language*. (3).

7511. *Introduction to Modern English*. (3). An introduction to the nature of language with emphasis on basic principles of English phonology and morphology with special attention to syntax. Emphasis on collecting and handling of linguistic data for research purposes.

7512. *English Syntax*. (3). Study of structures of Modern English from perspective of various contemporary theories to see how form and meaning are integrally related; emphasis on methods of investigating questions which need to be asked in exploring new territory.

7513. *Dialectology*. (3). Dialects and varieties of American English; emphasis on methods of analyzing data and techniques of eliciting responses to gain information about word forms, syntax, and pronunciation; social implications.

7514. *Sociolinguistics*. (3). Language use in relation to social interaction and power structures; inequality in varied environments; appraisal of methodologies used in gathering and analyzing data.

7515. *Language and Literature*. (3). Application of linguistic theory to analysis of literature, nature of literary language, and linguistic options open to writers.

7530. *Field Experience and Practicum in ESL*. (3, 6). Experience in observing and teaching, peer teaching, and work with an English as a Second Language (ESL) specialist.

7531. *Theory and History of ESL*. (3). Survey of relation of linguistic principles to second language acquisition.

7532. *Principles of Skills Assessment in ESL*. (3). Application of theories of teaching second language skills with emphasis on testing in a second language.

7533. *Methods and Techniques of ESL in K-12*. (3). Techniques and resources for working with children and adolescents for whom English is a second language.

7535. *ESL Grammar*. (3). Grammatical systems and strategies of Modern English; analysis of English structures which tend to cause difficulty for ESL/SED speakers.

7602. *Fiction Workshop*. (3). Emphasis on the examination and the discussion of fiction written by students. Repeatable to maximum of 12 hours. PREREQUISITE: Permission of instructor.

7603. *Poetry Workshop*. (3). Emphasis on the examination and the discussion of poetry written by students. Repeatable to maximum of 12 hours. PREREQUISITE: Permission of instructor.

7701. Historical Perspectives on Literary Criticism. (3). Synchronic and diachronic approaches to history of literary criticism, classical to modern.

7702. Contemporary Perspectives on Literary Criticism. (3). Major movements in literary criticism of the twentieth century; topics vary, but emphasis given to contemporary theory and criticism.

7801. History of Composition. (3). Development of approaches to composition traced to their roots in classical tradition through changes introduced by rise of Christianity, scientific revolution, emphasis on universal education in America, and recent shifts in the paradigm.

7802. Theories of Composition: Early Perspectives. (3). Application of early theories of composition to tasks faced by modern writers and writing theorists, selections from early theorists, such as Plato, Aristotle, Cicero, Justin Martyr, and Augustine.

7803. Theories of Composition: Modern Perspectives. (3). Writings of modern composition theorists, including Flower, Kinneavy, Shaughnessy, Young, and others, with special emphasis on invention, purpose, arrangement, style, and audience.

7805. Foundations of Technical Writing. (3). Introduction to fields of technical, scientific, and corporate writing; relevant theories in the fields, including classical rhetoric, modern discourse theory, cognitive psychology, and semiotics; extensive practice in writing and analyzing technical documents

7806. Research Methods in Technical Writing. (3). Bibliographic techniques and an introduction to empirical methodologies for the study of the writing process and the testing of written documents.

7807. Workshop: Government and Corporate Writing. (3). Textual and contextual analysis of the kinds of writing produced most often in government law, and business; practice in writing correspondence reports, briefs, manuals, and proposals.

7808. Workshop: Scientific and Technical Writing. (3). Textual and contextual analysis of the kinds of writing produced most often in industry and the academic research community; practice in writing documents such as technical proposals, reports, computer documentation, and papers for publication.

7809. Technical Editing. (3). Current practices in editing and publication in the field of technical communication; topics include copy-editing, substantive editing, author-editor relations, and the production process.

7810. Document Design. (3). Theory of visual and written communication, focusing on the problem of how to integrate graphics and written text; practice in design and desktop publishing.

7811. Internship in Professional Writing. (3). Assigned on the basis of qualifications and availability, student does a semester's work in technical, scientific, legal, government, or business writing and provides an extensive report and analysis. PREREQUISITE: 12 hours of graduate study.

†7996. Thesis. (3-6). A prospectus for the thesis must be approved by the student's adviser and the department chair before the student registers for this course. The completed thesis must be approved by at least two readers.

† Grades of S, U, or IP will be given.

FOREIGN LANGUAGES AND LITERATURES

RALPH ALBANESE, JR., Ph.D., *Chair*
Room 375A Winfield Dunn Building

FERNANDO BURGOS, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Foreign Languages and Literatures offers a program leading to the Master of Arts degree in Romance Languages with concentration in either French or Spanish.

II. M.A. Degree Program

A student entering the program will be assigned a major adviser by the chair, and this adviser is to be

consulted in all matters concerning the student's program of study. It is the student's responsibility to obtain from the department office copies of the Information Sheet and the Required Reading List for detailed descriptions of requirements.

A. Program Prerequisites

1. A minimum of 24 upper-division semester hours or its equivalent in French, Spanish or a combination of the two.

2. A reasonable proficiency in the language of concentration, to be determined by the department prior to admission

B. Program Requirements

1. A total of 30 semester hours for candidates writing a thesis

2. A total of 33 semester hours for candidates not writing a thesis.

3. A minimum of 6 semester hours in the field of Romance languages and Literatures outside the language of concentration. NOTE: Linguistics 7101 and/or Linguistics 7201 may be used to satisfy all or part of this requirement.

4. Up to 9 hours may be taken in a collateral area with prior approval of the coordinator of graduate studies.

5. At least 23 hours must be taken in 7000 level courses.

6. A reading knowledge of a foreign language other than that of the concentration. This may be demonstrated by (a) achieving the forty-fifth (45th) percentile on the Graduate School Foreign Language Test (ETS), (b) achieving a grade of "B" or better in a four-semester language course (e.g. FREN/GERM/SPAN 2202 or equivalent), (c) achieving a grade of "B" or better in a graduate reading course (FREN/GERM 5701 or equivalent), or (d) some other manner approved by the coordinator of graduate studies.

7. In addition to fulfilling the foreign language reading requirement, candidates whose native language is not English must achieve a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) prior to completion of course work and pass an examination of oral fluency administered by the department.

8. A comprehensive written and oral examination after completion of all course work.

9. If a thesis is presented, an oral examination on the area of the thesis is required.

E100 LINGUISTICS (LING)

7101. Introduction to Linguistics I. (3). Nature of language; history of linguistic theory; morphology and syntax, concentrating on languages other than English.

7201. Introduction to Linguistics II. (3). Principles and applications of phonology, with major emphasis on languages other than English; historical linguistics, concentrating on Romance and Germanic languages; psycholinguistics, sociolinguistics, semantics.

E120 FRENCH (FREN)

†5701. French for Reading Knowledge I. (3). Introduction to reading of French. Intensive drill in recognizing and interpreting grammatical structures, especially those peculiar to scholarly written language. Emphasis on vocabulary building and determining meaning of words not previously encountered. Reading of texts in French at sight or after preparation. No previous knowledge of French required. Credit may not be applied toward the number of hours required for any graduate degree.

†5702. French for Reading Knowledge II. (3). Further work in recognizing and interpreting grammatical structures. Reading of specialized scholarly texts. Credit may not be applied toward the number of hours required for any graduate degree.

6301. French Phonetics. (3). The theory and practice of French sounds; especially recommended for teachers of French.

6302. Advanced French Grammar. (3). Practical, syntactical, and lexicological of contemporary French.

6412. Seventeenth and Eighteenth Centuries. (3). Classical theater and critical theories; essay, *nouvelle*, and *conte* in eighteenth century.

6413. Nineteenth Century French Literature. (3). Survey of literary movements and major authors with readings in all the major genres. PREREQUISITE: FREN 3301. RECOMMENDED: FREN 3411.

6414. Twentieth Century French Literature. (3). Survey of literary movements and major authors with readings in the novel, poetry, and theater. PREREQUISITE: FREN 3301 RECOMMENDED: FREN 3411.

7101. French for Business and Economy. (3). Basic vocabulary and institutions necessary for dealing in the French business world. *Open only to students enrolled in International MBA program.* PREREQUISITE: Successful completion of proficiency examination.

7102. French for Commerce. (3). Practical training in various aspects of correspondence and communications necessary for conducting business in French speaking communities. *Open only to students admitted to International MBA program.* PREREQUISITE: FREN 7101 or equivalent.

7103. Readings in French Business. (3). Reading and discussion of selection of texts dealing with business and economic life of French-speaking world. *Open only to students admitted to International MBA program.* PREREQUISITE: 7102 or equivalent.

7305. French Stylistics. (3). (6305). Way in which texts produce meanings, development of analytic and interpretative skills with which to read the textuality of literary writing and to determine devices which effect its particular expressiveness; examination of vocabulary, syntax structure, and rhetorical figures as literary convention and as deviation from convention.

7401. Old French Language and Literature. (3). Development of the French language from Latin to the early 13th Century. Readings include *La Chanson de Roland* and selections from the *romans courtois* of *Chretien de Troyes*, the *Lais* of Marie de France, *le Roman de la Rose*, *Accusin et Nicolette*, and *le Roman de Renart*. History of the liturgical and comic theater. Lyric poetry of Charles d'Orleans and Francois Villon.

7421. The French Renaissance. (3). Changes in aesthetics, poetics, and philosophy as seen in the writings of l'Ecole Lyonnaise, the Pléiade, Rabelais, Montaigne, Calvin, de Navarre, Etienne Jodelle, and Robert Garnier.

7425. Classicism Parlor to 1660. (3). Aesthetics and poetics of the baroque and preclassical periods. Selections from the writings of the precieux and baroque poets, Mairet, Rotrou, Saint-Sorlin, Scarron, Sorci, Cyrano de Bergerac. The theater of Corneille; early comedies of Moliere.

7426. Classicism After 1660. (3). The impact of Boileau and *l'Art poetique* in crystallizing classical principles and patterns. Masterpieces of Moliere and Racine. Representative selections from masters of the other genres in this period of French literature.

7470-7479. Special Topics In French Literature. (3). Literary movements, individual authors, or groups of authors of the nineteenth and twentieth centuries.

7491. Seminar In French Literature. (3). Introduction to research through investigations of limited scope. May be repeated for credit.

7492. Research In French Studies. (1-6). May be repeated for credit toward the concentration in French up to a maximum of six hours.

7531. The Age of the Enlightenment. (3). Comprehensive study of literary trends and innovations within the major genres as related to liberal ideas underlying the philosophy of Montesquieu, Voltaire, Diderot, Rousseau, and their contemporaries.

7691. Bibliography and Methods of Research. (1). Examination of bibliographical aids for the study of French literature; problems involved in various types of research; and study of the presentation and documentation of scholarly writing. *Required of all graduate students.*

†7791. The Teaching of French. (1). Required of all graduate assistants in French. Credit for this course cannot be applied toward the M.A. in Romance Languages with a concentration in French.

†7792. Practicum in Teaching (1-3). Professional development in teaching of French, including classroom experience, tests and measurement, language proficiency, computer-assisted instruction, and use of audio-visual resources in the classroom. Credit not

applicable to major. May be repeated. Limited to graduate students in French. PREREQUISITE: Permission of graduate coordinator.

†7793. **Reading for Comprehensives.** (1-6). Directed readings of required lists as preparation for comprehensive written and oral examination. Arranged on an individual basis. Credit not applicable to major. May be repeated. Limited to graduate students in French. PREREQUISITE: Students must have completed 18 hours of graduate work. PREREQUISITE: Permission of graduate coordinator.

†7996. **Thesis.** (1-6). The thesis in French carries six semester hours and must be approved by the candidate's thesis committee.

† Grades of S, U, or IP will be given.

E130 GERMAN (GERM)

†5701. **German for Reading Knowledge I.** (3). Introduction to reading of German. Intensive drill in recognizing and interpreting grammatical structures, especially those peculiar to scholarly written language. Emphasis on vocabulary building and determining meaning of words not previously encountered. Reading of texts in German at sight or after preparation. No previous knowledge of German required. Credit may not be applied toward the number of hours required for any graduate degree.

†5702. **German for Reading Knowledge II.** (3). Further work in recognizing and interpreting grammatical structures. Reading of specialized scholarly texts. Credit may not be applied toward the number of hours required for any graduate degree.

6443. **Major German Writers of the Twentieth Century.** (3). Selected works of Hesse, Thomas Mann, Kafka, Frisch, Duerrenmatt, Brecht, and Boell. PREREQUISITES: GERM 3411, 3412; or permission of the instructor.

6451. **The German Drama.** (3). Dramatic literature from the fifteenth to twentieth centuries with readings from *Reformation, Baroque, Enlightenment, Sturm und Drang, Classicism, Romanticism, Realism, and modern-period.* PREREQUISITES: Two courses from GERM 3301, 3411, 3412 or permission of instructor.

7101. **Advanced Business German I.** (3). Intensive work with interpreting and composing German business letters and other correspondence (TELEX, FAX, e-mail), German business organization and accounting practices; maintenance of conversational skills. Course is conducted in German. *Open only to students admitted to International MBA program.* PREREQUISITE: Successful completion of proficiency examination.

7102. **Advanced Business German II.** (3). German business documentation for domestic and foreign trade; finance, banking, role of the Bundesbank; advertising and marketing. Maintenance of conversational skills. Course is conducted in German. *Open only to students admitted to International MBA program.* PREREQUISITE: GERM 7101 or equivalent.

7103. **Advanced Business German III.** (3). Business and West German society 1949-1990. East German culture and business practices; reunification; Treuhand, unemployment, conversational skills. Course is conducted in German. *Open only to students admitted to International MBA program.* PREREQUISITE: GERM 7102 or equivalent. *Offered only in summer.*

E200 SPANISH (SPAN)

6302. **Advanced Grammar.** (3). Special problems in grammar. Required of all graduate assistants in Spanish and recommended for all M.A. candidates.

6306. **Applied Spanish Linguistics.** (3). (6501). Current research in linguistics, psycholinguistics, and sociolinguistics and their contribution to second-language teaching and second-language learning.

6410. **Spanish Literature and Civilization.** (3). Survey of literary movements and major figures with readings in literature and civilization. Required for all M.A. candidates.

6510. **Spanish American Literature and Civilization.** (3). Survey of literary movements and major figures with readings in literature and civilization. Required for all M.A. candidates.

7101. **Introduction to Hispanic Culture and Business.** (3). Hispanic community and family, customs, geography, demography of Spain and Spanish America; United States business in Latin America and Hispanic business in the United States. Course is conducted in Spanish. *Open only to students admitted to International MBA program.* PREREQUISITE: Successful completion of proficiency examination.

7102. **Commerce in the Hispanic World.** (3). Hispanic markets and techniques of penetrating them; international advertising, import-export and economic review of Hispanic nations; history and circumstances of the Hispanic corporate world. Course is conducted in Spanish. *Open only to students admitted to International MBA program.* PREREQUISITE: SPAN 7101 or equivalent.

7103. **Spanish Commercial Correspondence and Documents.** (3). Various letters and documents for conducting business among Hispanic nations; international financial institutions and import-export practices. Course is conducted in Spanish. *Open only to students admitted to International MBA program.* PREREQUISITE: SPAN 7102 or equivalent.

7201. **Workshop on Spanish Language.** (3). Idiomatic construction, word formation, culturally connotated vocabulary and modern style techniques through intensive text analysis and writing. Recommended: SPAN 6302.

7301. **Spanish Phonology.** (3). (6301). Principles of analysis of the sound system of human language; general sound system (phonetics) of Spanish; and phonemic contrastive analysis of sound systems of Spanish and English.

7304. **Evolution of Spanish.** (3). (6304). General history of the Spanish language based on political and cultural history of Spain and Spanish America. History of sound system, grammatical structures, word borrowings, and changes in meaning.

7305. **Spanish American Dialectology.** (3). (6305). Fundamental notions of language variation, regional and social varieties, stylistic varieties and linguistic demography of general features of Latin American Spanish with respect to phonology, morphosyntax and semantics.

7420. **Medieval Spanish Literature.** (3). (6420). Reading of Old Spanish. Medieval Spanish literature from Mozarabic lyric through *La Celestina*.

7421. **The Golden Age.** (3). (6421). Spanish poetry, drama, and prose of the sixteenth and seventeenth centuries.

7423. **Cervantes.** (3). (6423). *Don Quijote*.

7430. **Eighteenth and Nineteenth Century Spanish Literature.** (3). (6430). Romantic and post-romantic poetry and drama. *Costumbrismo* and rise of regional novel, realistic novel, and naturalistic novel.

7431. **Studies in 20th Century Peninsular Literature.** (3). Spanish drama, prose, and poetry of the twentieth century. Particular attention given to generations of 1898 and 1927 as well as the post-civil war period.

7451. **Studies on Spanish Culture.** (3). Literary history of Spanish autonomous regions as viewed through important writers; emphasis on regional dialects, character, economy and culture; readings and discussions in Spanish. May be repeated for total of 6 hours. Recommended: SPAN 6410.

7453. **Studies on Latin American Culture.** (3). Literary survey of social issues which affect perceptions of Latin America, its peculiar problems, and its social upheaval, readings and discussions in Spanish. May be repeated for total of six hours. Recommended: SPAN 6510.

7532. **Spanish American Drama.** (3). (6532). Development of the drama in Spanish America, with an emphasis on the twentieth century. PREREQUISITES: Permission of instructor.

7561. **Pre-Contemporary Spanish American Prose Fiction.** (3). Evolution of the Spanish American novel and short story from their beginnings through early twentieth century.

7562. **Contemporary Spanish American Prose Fiction.** (3). Representative Spanish American novels and short stories of the twentieth century since 1940.

7591. **Seminar in Spanish American Literature.** (3). Topics in Spanish American literature designed to be of special interest for the advanced graduate student. May be repeated up to nine hours.

7691. **Research in Hispanic Studies.** (1-6). May be repeated for credit toward the concentration in Spanish up to twelve hours.

7790-7799. **Special Topics in Hispanic Literature and Linguistics.** (3). Selected topics in Hispanic literature and linguistics, may include, but not limited to Latin-American short fiction, nineteenth century Peninsular literature, Latin-American drama, and variety of socio-linguistic studies. May be repeated for total of 6 credit hours.

†7891. **Teaching of Spanish.** (3). Methodology, theory, practice of teaching a foreign language. Credit not applicable to major. May be repeated. Limited to graduate students in Spanish. PREREQUISITE: Permission of graduate coordinator.

†7892. **Bibliography and Methods of Research.** (3). Examination of bibliographical aids for study of Hispanic literature or Spanish linguistics, or both; problems involved in various types of research and study of the presentation and documentation of scholarly writing. Credit not applicable to major. May be repeated. Limited to graduate students in Romance Languages. PREREQUISITE: Permission of graduate coordinator.

†7893. **Professional Development Seminar for Romance Language Majors.** (3). Presentation of scholarly work by faculty, graduate students, and visiting professors, writers. Credit not applicable to major. May be repeated. Limited to graduate students in Romance Languages. PREREQUISITE: Permission of graduate coordinator.

†7894. **Reading for Comprehensives.** (1-6). Directed readings of the required lists as preparation for the comprehensive written and oral examination. Arranged on an individual basis. Credit not applicable to major. May be repeated. Limited to graduate students in Romance Languages. PREREQUISITE: Permission of graduate coordinator and 18 hours of graduate work.

†7996. **Thesis.** (1-6). The thesis in Spanish carries six semester hours and must be approved by the candidate's thesis committee.

E211 LANGUAGES AND LITERATURES (LAL)

6010-19. **Special Topics in Foreign Literatures.** (3). Topics are varied and announced in *Schedule of Classes*.

† Grades of S, U, or IP will be given.

GEOGRAPHY AND PLANNING

HSIANG-TE KUNG, Ph.D.,
Chair and Coordinator of Graduate
Studies — Geography
Room 107, Johnson Hall
GENE PEARSON, A.I.C.P.,
Director and Coordinator of Graduate
Studies — City and Regional Planning
Room 226, Johnson Hall

GEOGRAPHY

I. The Department of Geography offers graduate programs leading to the Master of Arts and the Master of Science degrees.

II. M.A. and M.S. Degree Programs

A. Program Admission

Contingent upon admission to the Graduate School and the approval of the departmental chair and the departmental graduate faculty. Students not having

undergraduate credit for cartography must take the course at its earliest offering. Students not having undergraduate credit in regional geography must include at least one regional course in their graduate program.

B. Program Requirements (M.A. and M.S.)

1. Satisfactory completion of GEOG 7801
2. Completion of either Option I or Option II.
 - a. Option I: minimum of 27 semester hours and a six hour thesis. At least 23 semester hours of courses must be taken at the 7000 level.
 - b. Option II: minimum of 36 semester hours including one research paper of professional quality and acceptable format. At least 25 semester hours of courses must be taken at the 7000 level. Each student must take GEOG 7900.
3. One three semester hour graduate course (6000 or 7000 level) from each of the core areas:
 - a. environmental and earth sciences: 61--, 62--, 71--, 72-- numbered courses
 - b. human-economic geography: 64--, 74-- numbered courses
 - c. geographic techniques: 65--, 75-- numbered courses. Students not submitting acceptable undergraduate credit in quantitative methods or statistics will be required to take GEOG 6521.
4. Each student should submit a degree program plan to the graduate faculty after completion of 9 semester hours of graduate course work.
5. In consultation with the adviser, each student should select a guidance committee by the completion of 18 semester hours of graduate course work.
6. The thesis proposal should be submitted to the adviser by completion of 18 hours of graduate course work.
7. Successful completion of a comprehensive examination; not to be taken prior to the registration for the 4th semester credit hour. A separate defense of the Thesis is required for those students electing Option I.

The M.S. degree will be awarded only to those students submitting a minimum of 12 semester hours of course work from the combined areas of environmental and earth science and geographic techniques.

EE220 GEOGRAPHY (GEOG)

- 6111. Synoptic Meteorology I.** (4). Basic weather parameters and atmospheric processes in weather analysis and forecasting. *Three hours lecture, two hours lab.* PREREQUISITE: GEOG 1101 or consent of instructor.
- 6112. Synoptic Meteorology II.** (4). Advanced forecasting skills and techniques and detailed specifics of weather forecasting, including severe weather and aviation forecasting. *Three hours lecture, two hours lab.* PREREQUISITE: GEOG 6111.
- 6115. Dynamic Meteorology I.** (3). General principles of thermodynamics, equation of state, thermodynamic diagrams, hydrostatic equilibrium, stability, convection, and application of these principles to weather analysis and forecasting. PREREQUISITES: MATH 1321, 2321, and PHYS 2511.
- 6116. Dynamic Meteorology II.** (3). Continuation of GEOG 6115. Application of general principles of mechanics and fluid motion to study of the atmosphere. Topics include: equations of motion, circulation, divergence, numerical weather prediction, kinematics of fluid flow, vorticity, and surfaces of discontinuity. PREREQUISITE: GEOG 6115.
- 6121. Earth Science: The Earth.** (3). An analytical study of landforms, their changes and their uses to humankind.
- 6122. Earth Science: The Soil.** (3). Processes and dynamics of soil profile development. Major models of soil development examined and applied to soil genesis in Tennessee. Application of soil techniques to archaeology, planning, earth sciences, and soil conservation and erosion problems. Emphasis on field and laboratory techniques with field work in soil mapping and soil taxonomy. *Two lecture, two laboratory hours per week.*

6131. Earth Science: The Oceans. (3). An analytical study of the oceans to include their physical, chemical, and biological qualities; their movements, resources, climate influences, and their importance for transportation.

6201. Urbanization and Environment. (3). (Same as PLAN 6201). A study of the ways humans have changed the natural environment by urbanization and how physical features and processes influence the development and function of cities.

6211. Climatology. (3). Study of climatic elements and methods of data analysis; application of climatology in agriculture, health, economics, and architecture. PREREQUISITE: GEOG 1101 and PHYS 2111 or equivalent.

6215. Physical Climatology. (3). Components of earth's energy balance; emphasis on solar radiation, heat transfer, and evapotranspiration. PREREQUISITES: GEOG 1101 and PHYS 2111 or equivalents.

6231. Water Resources. (3). (Same as PLAN 6231). Study of hydrologic processes and their application to needs of cities, industry, agriculture, and recreation.

6241. Biogeography. (3). Principles underlying spatial distribution of plants, including physical, biotic, and historical controls; vegetation dynamics; survey of patterns and processes of North American vegetation.

6251. Environmental Threats to Human Survival. (3). A survey of environmental threats, some of which may threaten the very survival of the human species. The spectrum of threats ranges from planet-wide climatic changes and potential changes in earth-sun relationships to more immediate threats such as inadequate food production, local disasters, and nuclear contamination.

6304. Geography of Europe. (3). A geographic analysis of the physical, cultural, and economic characteristics of Europe.

6305. Geography of Russia and Its Neighbors. (3). A geographic analysis of physical, cultural, and economic characteristics of Russia and former Soviet Republics.

6306. Geography of Asia. (3). Significance of regional differences in Japan, China, and India, and a brief survey of the remaining areas.

6313. Geography of the United States and Canada. (3). Physical, cultural, and economic characteristics of the United States and Canada.

6316. Geography of the South. (3). Selected regions in the South with emphasis on changes and trends in the cultural-physical complex.

6324. Geography of Middle America. (3). Peoples and places of Mexico, Central America, and the Caribbean; history of Mayan and Aztec culture; contemporary development issues, and the region's global situation.

6325. Geography of South America. (3). Lands and peoples of the diverse regions of South America. Folk populations, Amazonia, Andean issues; contemporary economics and resources in a developing world region.

6431. Urban Geography. (3). Allocation of land for urban uses; the adjustments and adaptations to existing physical phenomena; the patterns, functions, and forms of specific urban land areas; and some of the continuous problems of urban development and growth.

6442. Commercial Land Use. (3). Factors influencing location pattern of commercial land uses; emphasis on location analysis of commercial real estate.

6443. Transportation Planning. (3). (Same as PLAN 6443). Planning for various transportation modes and networks and impact on urban land-use and contemporary development problems.

6502. Computer Mapping. (3). (Same as PLAN 6502). Instruction in use of computer mapping programs as effective techniques for visual presentation of a wide variety of data. *Two lecture, two laboratory hours per week.*

6503. Map Design and Production. (3). Cartographic theory and application to thematic mapping; use of computer for creation, editing, proofing, and reproduction of maps. *Two lecture, two laboratory hours per week.*

6510. Aerial Photo Interpretation. (3). (Same as GEOL 6510). Systematic treatment of elements and steps involved in interpreting, measuring, and mapping of images appearing on aerial photographs. *Two lecture, two laboratory hours per week.*

6511. Remote Sensing of the Environment. (3). (Same as GEOL 6512). Survey of theory and application; using color infrared, thermal, and radar images generated from satellites for geographic, environmental, and planning purposes. *Two lecture, two laboratory hours per week.* PREREQUISITE: GEOG 4510/6510 or consent of instructor.

6514. Geographic Information Systems. (3). (Same as PLAN 6514). Role and nature of using interactive computer mapping for decision support in resource management; structure and use of spatial databases in the decision process. *Two lecture, and two laboratory hours per week.*

6521. Quantitative Methods. (3). (Same as PLAN 6521). Introduction to quantitative methods in spatial analysis. PREREQUISITE: Permission of instructor.

6524. Advanced Geographic Information Systems. (3). Database manipulation, data interface, and cartographic modeling techniques with emphasis on customizing GIS applications and automated modeling procedures; use and manipulation of commercially available data as sources for GIS applications. *Two lecture, two laboratory hours per week.* PREREQUISITE: GEOG 4514 or consent of instructor.

6531. Field Methods. (3). Basic methods of geographic analysis used in classifying, analyzing, and reporting field generated data including field mapping, sampling procedures, questionnaires, and archival and public document research. *One and one-half lecture, three hours laboratory hours per week.*

6610-19. Special Topics in Geography. (1-3). Topics are varied and announced in *Schedule of Classes*.

16700. Geography Internship. (1-9). Provides opportunity to gain experience working with an agency in which geographic knowledge can be utilized. Repeatable to a maximum of 9 hours. Credit allowed only after acceptance of report. PREREQUISITE: Approval of instructor and chair.

7111. Seminar in Climatology. (3). Discussion of major topics in climatology, including: climate change, el nino, ozone, depletion, acid rain, urban heat islands, and other topics. PREREQUISITE: GEOG 6211.

7120. Seminar in Geomorphology. (3). Analysis and application of major geomorphic models; threshold, episodic, time-space, systems, and magnitude; frequency principles examined in both classroom and field; dating techniques applied to geomorphic interpretations; individual and team projects required.

7201. Environmental Analysis Seminar. (3). (Same as PLAN 7302). Analytical and qualitative critique of the physical environment with emphasis on environmental quality, including air and water quality standards, soil erosion, solid waste management, and nuisance control.

7221. Seminar in Conservation. (3). Selected areas of study in conservation, including overpopulation, deforestation, desertification, food shortages, pollution, and soil erosion. May be repeated with change in content for total of 6 hours credit.

7231. Seminar in Water Resources. (3). Issues, problems, and research on selected topics of surface and groundwater, water uses, and fluvial process.

7241. Seminar in Biogeography. (3). Major topics and research problems in biogeography; may include vegetation dynamics, vegetation history, or regional issues.

7301. Seminar in Regional Geography. (3). Regional analysis of selected areas of the world including: the U S, Canada, Europe, Soviet Union, Middle America, South America, Asia, Africa, and Oceania. May be repeated with a change in content for a total of six hours.

7316. Seminar in the U.S. South. (3). Systematic analysis of distinctive physical and human phenomena characteristic of the U.S. South.

7430. Seminar in Economic Geography. (3). Selected topics in economic geography. Subjects studied will vary. May be repeated with change in content for a total of 6 hours credit.

7431. Seminar in Urban Geography. (3). A study of the spatial aspects of urban development and the analysis of selected urban problems.

7434. Seminar in Land Use. (3). Systematic analysis of suburban and rural land use characteristics, patterns, and problems. Focus on U.S.

7441. Population Geography. (3). A survey of the density, distribution, migrations, trends, and settlement patterns of world population.

7471. Cultural Geography. (3). A systematic analysis of the manner in which selected culture traits interact with other patterned phenomena to produce distinctive geographic landscapes. Individual student study on selected problems is an integral part of this course.

7503. Seminar in Cartography. (3). Selected areas of study of current research in cartography. Topics may include digital mapping, map communications, global positioning systems, or other related topics May be repeated with a change of content for a total of 6 hours credit.

7504. Seminar in Geographic Information Systems. (3). (Same as PLAN 7504). Implementation and management of GIS technology; design, automation, and applications to landuse and natural resource inventories.

7511. Seminar in Remote Sensing. (3). Use of remote sensing technology for solving environmental problems: state-of-the-art techniques and methods of image processing.

7541. Field Studies in Geography. (1-6). Faculty conducted field trip emphasizing study of geographical phenomena; location will vary; topics may include physical landscapes, land-use patterns, cross-cultural analysis, micro and regional economics, or other geographical processes. Credit hours are based on length of time in field. Requires research and written report. May be repeated with a change in content for maximum of 6 hours. PREREQUISITES: Permission of instructor and completion of special registration.

7621. Independent Study. (1-3). Independent investigation of a research problem selected in consultation with the instructor. May be repeated for a maximum of 6 credit hours.

7801. Geographic Thought and Methodology. (3). Introduces student to major philosophies of geography and to methods of geographic research.

7811. Geography for Teachers. (3). Application of geographic principles in teaching social studies and earth sciences. Emphasis on geography of Memphis and Mid-South.

†7900. Professional Paper. (1) Preparation and presentation of research paper.

†7996. Thesis. (1-6). Student must research, write, and defend a thesis on a topic approved by major professor and advisory committee.

† Grades of S, U, or IP will be given.

CITY AND REGIONAL PLANNING

I. M.C.R.P. Degree Program

A. Program Admission— Applicants must satisfy admission standards of the Graduate School and receive favorable endorsement from the planning faculty. Admission will be based on applicable test scores (GRE or MAT); undergraduate grade point average; previous education and/or experience; and ability to articulate career and education objectives.

B. Program Prerequisite— Students are accepted from all undergraduate disciplines and professional areas; however, the department determines if students must do remedial work. Some credit may be granted by the department for remedial work obtained at the graduate level after entering the program.

C. Program Requirements— The student is required to complete a minimum of 48 semester hours. Thirty

30 hours are taken in the core curriculum and 15 hours are electives which lead to a 3 hour Capstone Project. The fifteen 15 hours of electives allow the student to extend basic knowledge gained in the core curriculum and can include such subjects as economic development planning, urban design, land use and transportation planning, planning information systems, housing and community development planning, planning law, and environmental planning.

The 3 hour Capstone Project, submitted as a written report and orally defended, is required of all majors as a terminal experience designed to demonstrate a student's mastery of planning process and substance. The comprehensive examination must be successfully completed at the end of the semester in which the student expects to graduate.

D. Transfer of Credits—The Director may recommend to the Graduate Dean credit for planning course work successfully completed at other institutions but not to exceed 12 semester hours. For those students formerly enrolled in graduate planning programs accredited by the Planning Accreditation Board, a maximum of 24 hours in planning course work may be approved.

E. Planning Profession— Planning uses a multi-disciplinary approach to solve urban and regional problems. As such planning is concerned with the spatial arrangement and interaction of human activity systems in urbanized areas and enables the arrangement of facilities and programs in an optimal and comprehensive way. As a professional practice, planning is concerned with guiding the growth and development of cities and regions toward desired objectives. Planning increases the effectiveness of public and private decision-making by giving careful consideration to goal formulation, the collection and organization of information and knowledge, and the design of policies and programs. The curriculum is intended to provide the basic knowledge and skills in theory, techniques, methods and practice. The program is a full member of the Association of Collegiate Schools of Planning, and its degree is accredited by the Planning Accreditation Board.

E230 CITY AND REGIONAL PLANNING (PLAN)

CORE CURRICULUM

6521. Quantitative Methods. (3). (Same as GEOG 6521). An introduction to quantitative methods in spatial analysis.

7000. Introduction to Planning. (3). Planning trends in United States and abroad, including land use planning, developmental planning, social planning, transportation planning, community facilities planning, and planning as a governmental activity at the local, state and federal levels.

7002. City Planning Principles and Theory. (3). The fundamental principles and theory of urban and regional planning with emphasis on comprehensive planning processes and appropriate theoretical foundations.

7004. Land Use Controls. (3). Methods of regulating land use, including zoning, subdivision controls and growth management techniques; legal framework for planning, including enabling legislation, local ordinances, and significant judicial decisions.

7006. Comprehensive Planning Studio. (3). Individual and group practice in collection, analysis, and presentation of field data on selected planning problems.

7007. Special Projects Studio. (3). Individual and group planning for development of major public and private projects.

7008. Site Planning. (3). Principles and methods of preparing site plan for development project, including techniques of determining suitability of site resources and compatibility of land uses, site impact analysis, and site plan review procedures.

7011. Financing Community Development. (3). Introduction to and principles of municipal finance with emphasis on preparation of capital improvements program; methods of forecasting public revenues and expenditures, project selection methods, and review of financing mechanisms.

7012. Methodology and Techniques in Planning. (3). Professional practice methodology used in assessment of existing socio-economic conditions of

communities, trend analysis, and forecasts of future population and employment for purpose of developing comprehensive plan.

7202. Land Use Planning. (3). Theory and practice of land use planning, with emphasis on methods of land use analysis and economic and social basis for land use decisions.

ELECTIVES

6201. Urbanization and Environment. (3). (Same as GEOG 6201). A study of the ways humans have changed the natural environment by urbanization and how physical features and processes influence the development and function of cities.

6231. Water Resources. (3). (Same as GEOG 6231). Study of hydrologic processes and their application to needs of cities, industry, agriculture, and recreation.

6443. Transportation Planning. (3). (Same as GEOG 6443). Planning for various transportation modes and networks and impact they have on urban land use and contemporary development problems.

6502. Computer Mapping. (3). (Same as GEOG 6502). Instruction in use of computer mapping programs as effective techniques for visual presentation of a wide variety of data. *Two lecture, two laboratory hours per week.* PREREQUISITE: BASIC, FORTRAN, or other computer language.

6514. Geographic Information Systems. (3). (Same as GEOG 6514). Role and nature of using interactive computer mapping for decision support in resource management; structure and use of spatial databases in the decision process. *Two lecture, and two laboratory hours per week.*

7101. Regional Planning. (3). Area and region development, regional planning organization, the various levels of planning, the functions and problems of regional plan preparation and plan implementation.

7201. Community Facilities Planning. (3). Planning the location and design of community facilities in the light of changing concepts of public service and community organization.

7204. Urban Revitalization Planning. (3). Changing urban land uses, first in areas which must improve or rebuild obsolete patterns, functions, and forms; and second in areas with acceptable uses, structures, and institutions, which in the interest and welfare of all the people must have additional space for growth and expansion.

7205. Seminar in Urban Design. (3). History and theory of urban form and implications for the design of cities; survey of urban design techniques.

7206. Housing. (3). Survey of housing market characteristics, financing, development, preservation and redevelopment from both public and private perspectives.

7302. Environmental Analysis Seminar. (3). (Same as GEOG 7201). Analytical and qualitative critique of the physical environment with emphasis on environmental quality, including air and water quality standards, soil erosion, solid waste management, and nuisance control.

7504. Seminar in Geographic Information Systems. (3). (Same as GEOG 7504). Implementation and management of GIS technology; design, automation, and applications to land use and natural resources inventories.

7701. Research Problems. (1-3). Independent investigation directed toward research problems in city and regional planning. May be repeated for a maximum of 3 hour credit.

7708. Planning Practice. (3). Practical skills in operating a planning office in both public and private sectors. PREREQUISITE: Approved planning experience.

†7896. Capstone Project. (1,2,3). Preparation of a research paper that exhibits mastery of process and substantive area of planning.

† Grades of S, U, or IP will be given.

GEOLOGICAL SCIENCES

PHILI DEBOO, Ph.D., *Chair*
Room 402, J. M. Smith Building

DAVID N. LUMSDEN, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Geological Sciences offers a graduate program leading to the Master of Science degree with a major in Geological Sciences and concentrations in Geology and Geophysics, and the Doctor of Philosophy degree with a major in Geophysics

II. M.S. Degree Program

A. Program Admission

1. Acceptable score on Graduate Record aptitude test.

2. An undergraduate degree in geological sciences, physics, chemistry or mathematics. Students holding a bachelor's degree in other disciplines will be considered on an individual basis.

B. Program Requirements

1. 2 semester hours selected from Seminar in Geology (GEOL 7701) or Seminar in Geophysics (GEOP 7701).

2. Geology Concentration: 12 semester hours selected from Geology courses (GEOL). Students may be required to make up deficiencies as determined on an individual basis.

Geophysics Concentration: GEOP 6101, 6401, 7601, 7602, 7375, and either GEOP 7440 or GEOL 7311. In addition, students from outside geology courses may be requested to make up deficiencies in one or more of Structural Geology (GEOL 3512), Field Geology (GEOL 4622), Advanced Physical Geology (GEOL 6111) and other courses as determined on an individual basis.

3. Thesis (GEOL 7996 or GEOP 7996) 6 semester hours.

4. Electives selected in consultation with the major professor to complete 32 semester hours.

5. At least 22 hours at or above 7000 level (includes thesis).

III. Ph.D. Degree Program (Major in Geophysics)

A. Nature of the Program

The doctorate prepares the student for a research career, primarily in teaching and in the application of the basic areas of physics and mathematics, and through the experience of successfully completing a comprehensive unit of original research. Dissertation research tends to be interdisciplinary and may involve topics such as seismotectonics, seismicity, wave propagation phenomena, earth structure, earth physics as well as other areas approved by the Student Advisory Committee. Methodology may involve field measurements, remote sensing, seismic instrumentation, seismogram interpretation, discrete signal processing, and elastic theory, among other disciplines. The prescribed examinations will permit the student to demonstrate mastery of the appropriate fields. The individual curriculum will reflect the student's preparation, the needs of the dissertation topic selected, and will assure a strong general knowledge of earth science.

B. Program Admission

1. A minimum score of 650 on the quantitative section of the GRE plus adequate language skills (550 TOEFL).

2. An undergraduate or advanced degree in geology, mathematics, physical sciences, or engineering. For a geology major, the minimum preparation in physical science will be a two or three semester calculus-based course in physics. For a physical science or engineering major, mathematics through differential equations will be considered the minimum preparation. Additional undergraduate preparation in mathematics and physical science or engineering is advisable. The general quality of the applicant's academic record will be reviewed as a key to their ability to complete the doctoral requirements. Evidence of computer literacy will be considered relevant.

3. Geophysics is a quantitative and interdisciplinary science. Applicants with a bachelor's degree and an academic record of quality in a relevant field may proceed with a graduate program in those disciplines, mathematics, but otherwise showing promise, may be admitted with a requirement of additional mathematics and physics preparation, without graduate credit.

C. Program Requirements

1. A minimum of 72 semester hours of credit beyond the bachelor's degree. Of the required total, 36 semester hours of credit, exclusive of dissertation

and advanced study courses, must be obtained from courses in geophysics, geology, mathematics, physics, or engineering departments on advice of the student's graduate advisor. For students from outside the geological sciences, additional preparation in general geology, including a course in structural geology, will be required. Other courses may be required to make up deficiencies as determined on an individual basis and through the qualifying examination.

2. During the first semester, a qualifying examination will be given to incoming graduate students. This examination is diagnostic in nature and will test each student's preparation, and will aid in planning the individual course requirements.

3. After the completion of required course work, the student must pass a comprehensive examination covering the major field of geophysics and the specific areas of knowledge required for completion of the dissertation. Admission to candidacy will be recommended to the Graduate School by the student's advisory committee upon completion of course work qualifying examination, and comprehensive examination.

4. Each Ph.D. candidate must complete an original research project, submit a written dissertation of publishable quality describing the results of the research, and orally present and defend the research before the advisory committee.

Core Course Requirements

1. Students are expected to take the following required courses:

MATH 7375-76.	Methods of Mathematical Physics
GEOL 7112.	Advanced Geophysics
GEOL 7311.	Tectonics
2. Plus three of the following courses (or equivalent credit):	
GEOP 6210.	Applied Geophysics
GEOL 7402.	Earthquake Seismology
GEOP 7440.	Seismotectonics
GEOP 7601.	Mathematical Methods in Geophysics
GEOP 7602.	Time Series Analysis in Geophysics
GEOP 8401.	Advanced Seismology
GEOP 8601.	Inverse Methods in Geophysics

E235 GEOLOGY (GEOL)

6010-19. Special Topics in Geological Sciences.

(3). Topics vary and are announced in the *Schedule of Classes*.

6100. Petroleum Geology and Basin Analysis. (3).

Application of geologic principles to the search for economic accumulations of oil and gas. Lab emphasis on prospect selection using subsurface techniques. Lecture emphasis on depomodels and depositional systems. *Two lecture, two laboratory hours per week.* PREREQUISITE: GEOL 3712.

6202. Geomorphology. (4).

Description, origin, and interpretation of landforms and their relationships to underlying structure and geologic history; processes acting on earth's surface including active tectonics, weathering, mass-wasting, climate change, and fluvial, shoreline, and glacial processes. *Three lecture, two laboratory hours per week.* PREREQUISITE: GEOL 1102.

6211. Physical Hydrogeology. (3). Physical hydrogeology and development of groundwater; groundwater in hydrologic cycle; aquifer characteristics and tests. *Two lectures and two laboratory hours per week.* PREREQUISITES: GEOL 1101.

6322. Petrology. (4). Description and interpretation of igneous and metamorphic rocks through study of thin sections. *Two lecture, four laboratory hours per week.* PREREQUISITE: GEOL 3313 or equivalent.

6332. Introduction to Geochemistry. (3). Geological and chemical processes which govern or control the migration and distribution of the elements and atomic species in the earth in space and time. *Three lecture hours per week.* PREREQUISITE: Permission of instructor.

6341. Aqueous Geochemistry. (3). Physical chemistry of aqueous solutions as it applies to geochemical processes on earth's surface. PREREQUISITE: CHEM 1112.

6342. Environmental Geochemistry. (3) Inorganic and organic geochemical concepts applied to transport and fate of contaminants in surface water, ground water, and sediment. *Three lecture hours per week.*

PREREQUISITE: GEOL 6341 or permission of instructor.

6351. Advanced Structural Geology. (3). Analysis of crustal structures; stress and strain in rocks, mechanical behavior of earth materials, mechanical interpretation of crustal structures. PREREQUISITE: GEOL 3512, MATH 1321.

6510. Aerial Photo Interpretation. (3). (Same as GEOP 6510). Systematic treatment of elements and steps involved in interpreting, measuring, and mapping of images appearing on aerial photographs. *Two lecture, two laboratory hours per week.*

6512. Remote Sensing of the Environment. (3). (Same as GEOP 6511). Survey of theory and application of using color, infrared, thermal, and radar images generated from satellites for geographic, geologic, environmental, and planning purposes. *Two lecture, two laboratory hours per week.* PREREQUISITE: GEOP 6510 or permission of instructor.

6701. Spring Field Trip. (1-2). Conducted field trips during spring vacation. About 30 hours of field work will follow 2-4 hours of lectures. Open to non-majors. Among the areas which may be included are Ouachita-Arbuckle-Wichita mountains of Oklahoma; Ouachita, and adjacent mineral districts; central and southern Appalachians; and Gulf Coastal Plain. Check *Schedule of Classes* for specific location. NOTE: May be repeated three times when location varies. A total of no more than 8 hours credit may be earned. PREREQUISITE: Permission of instructor.

7010-19. Special Topics in Geology. (1-3). PREREQUISITE: Consent of Instructor.

7102. Electron Beam Analysis. (3). Introduction to scanning electron microscopy and electron beam microanalysis. *One lecture, four laboratory hours per week.* PREREQUISITE: CHEM 1102 or CHEM 1132 and permission of instructor.

7202. Quaternary Geology. (3). Synthesis of geomorphologic, stratigraphic, and geochronologic methods used to understand global glacial and interglacial climate fluctuations during last two million years. *Three lecture hours per week.* PREREQUISITE: Permission of instructor.

7301. Geologic Data Analysis. (3). Use of the computer in data file construction and management, use of file with various programs, and use of statistical tests, regression lines, maps, and a classification of data sets with the aid of the computer. *Two lecture and two laboratory hours per week.* PREREQUISITE: COMP 1200 and permission of instructor.

7311. Tectonics. (3). Principles and geometry of plate tectonics; development of plate tectonic theory; relationship between plate motions and regional tectonics; structural, stratigraphic, magmatic, and geophysical features of various tectonic regimes. PREREQUISITE: GEOL 3512 or equivalent.

7320. Individual Study in Environmental Geology. (1-4). Directed laboratory or field research project selected in consultation with instructor. Report required.

7321. X-Ray Diffraction Techniques. (3). The application of x-ray diffraction techniques to crystallographic problems. *One lecture, four laboratory hours per week.* PREREQUISITE: Permission of instructor.

7340. Clay Mineralogy. (3). The origin, occurrence and properties of well-crystallized and fine-grained layer silicates and related minerals are discussed in terms of their chemical and structural variations. PREREQUISITE: Permission of instructor. *Two lecture, two laboratory hours per week.*

7350. Individual Study in Paleontology. (1-4). Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

7352. Sedimentary Petrology. (4). Examination of sedimentary rocks in the field, in hand specimen, and through the microscope with the view of explaining sedimentary rock classification, the post-depositional changes that occur in sediments and the bearing of these factors on geology as a whole. PREREQUISITE: GEOL 3311 and GEOL 3712. Permission of instructor. *Three lecture, two laboratory hours per week.*

†7360. **Individual Study in Mineralogy and Crystallography.** (1-4). Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

†7370. **Individual Study in Petrology.** (1-4). Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

†7380. **Individual Study in Geomorphology.** (1-4). Directed work selected in consultation with instructor. Hours and credit to be arranged. Report required.

7400. **Advanced Field Methods.** (3). Conducted two to five day field studies in Geology. Topics will vary according to location and faculty interest. May be repeated. Only three (3) credits may be applied to major. Required for graduate assistants. PREREQUISITE: Permission of instructor.

7401. **Individual Studies in Geology.** (1-4).

7511. **Economic Mineral Deposits.** (3). Origin, occurrence, and composition of metallic and non-metallic mineral deposits. *Three lecture hours per week.* PREREQUISITES: Permission of instructor.

†7710. **Individual Study in Tectonics.** (1-4). (7510). Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

7701. **Seminar in Geology.** (1). (7631).

†7996. **Thesis.** (1-6).

† *Grades of S, U, or IP will be given.*

E237 GEOPHYSICS (GEOP)

6101. **Introduction to Geophysics.** (3). Fundamental topics include: earth's age and thermal state; main gravity and magnetic fields; dynamic models of earth's interior; comparison of terrestrial planets. PREREQUISITES: PHYS 2111 and MATH 1321.

6111. **Advanced Physical Geology.** (3). Geology for geophysicists from an advanced quantitative viewpoint; earth as planet: its structure, physical and chemical environment, materials and processes on the surface and interior, evolution from geological and physical methods of study. PREREQUISITE: Permission of instructor.

6201. **Applied Geophysics.** (4). Survey of geophysical prospecting methods, seismic reflection and refraction techniques, and electrical, magnetic, and gravity field measurements; emphasis on fundamental principles governing acquisition and interpretation of geophysical data. *Three lecture, two laboratory hours per week.*

6401. **Introduction to Seismology.** (3). Wave propagation in the earth; elasticity, elastic wave equation, vibrations and waves, body and surface elastic waves, seismic rays, reflection and refraction of seismic waves, and the earthquake source. *Two lecture, two laboratory hours per week.* PREREQUISITE: MATH 6391 or permission of instructor.

7010-7019. **Special Topics in Geophysics.** (1-3).

7112. **Advanced Geophysics.** (3). Aspects of global geophysics. Emphasis on internal properties of earth as revealed by seismic waves, studies of earth gravity and magnetic fields and earth's thermal regime. PREREQUISITE: GEOP 6101 or permission of instructor.

7353. **Geodynamics.** (3). Continuum physics and its application to geophysical transport processes; stability analysis of thermal and fluid systems; development of quantitative models to describe geophysical phenomena. PREREQUISITE: GEOL 6351 or permission of instructor.

7375. **Methods of Mathematical Physics I.** (3). (Same as MATH 7375). Vector space, matrices, tensors, vector fields, function spaces, differential and integral operators, transform theory, partial differential equations. PREREQUISITE: MATH 3391, 4242 and 4350 or permission of the instructor.

7376. **Methods of Mathematical Physics II.** (3). (Same as MATH 7376). Complex variables, asymptotic expansions, special functions, calculus of variations, additional topics on matrices and opera-

tors, topics in non-linear analysis. PREREQUISITE: MATH 7375.

7400. **Advanced Field Methods.** (3). Conducted two to five day field studies in Geophysics. Topics will vary according to location and faculty interest. May be repeated. Only three credit hours applicable to major. Required for graduate assistants. PREREQUISITE: Permission of instructor.

7402. **Earthquake Seismology.** (3). Advanced theory and observation of body and surface waves, reflection and refraction, free oscillations of the earth, earthquake location, ray tracing, inversion theory, earthquake source mechanisms, moment tensors, induced seismicity, seismic gaps earthquake cycle, and strong motion seismology. PREREQUISITE: GEOP 6401 or permission of instructor.

7440. **Seismotectonics.** (3). Examination of the role of earthquake seismology in understanding active tectonic features on or near the surface of the earth. PREREQUISITE: GEOP 6401 or permission of instructor.

†7601. **Studies in Seismogram Reading.** (1). Seismogram interpretation of recent earthquakes recorded by instruments of CERl and Global Digital Seismic Network. PREREQUISITE: Permission of instructor.

7602. **Geophysics Time Series Analysis.** (GEOL 7358). Fundamentals of digital processing of geophysical data, both purely mathematical and applied aspects with attention to digital seismograms and gravity and magnetic data.

7701. **Seminar in Geophysics.** (1). (GEOL 7641).

†7750. **Individual Study in Geophysics.** (1-4). (GEOL 7550). Directed work selected in consultation with instructor. Report required. Hours and credit to be arranged.

†7996. **Thesis.** (1-6).

8010-19. **Special Topics in Geophysics.** (1-3).

8401. **Advanced Seismology.** (3). Theory of seismic sources and wave propagation in the earth; elastodynamics; representation of seismic sources, seismic waves generated by point sources, reflection and refraction of plane and spherical waves, surface and body waves in stratified media, free oscillations of the earth and principles of seismometry. PREREQUISITE: Permission of instructor.

8601. **Inverse Methods in Geophysics.** (3). Methods used to determine earth parameters from geophysical observations; applications of probability theory, solution of linear problems and iterative solution of nonlinear problems; students will solve an inverse problem in their field of interest. PREREQUISITE: Permission of instructor.

8701. **Advanced Seminar in Geophysics.** (1).

8750. **Advanced Study in Geophysics** (1-9). Independent research in consultation with student's graduate advisor. Report required. Hours and credit to be arranged.

9000. **Dissertation.** (1-9).

† *Grades of S, U, or IP will be given.*

HISTORY

F. JACK HURLEY, Ph.D., *Chair*
Room 100 Mitchell Hall

WILLIAM J. MURNANE, JR., Ph.D.,
Coordinator of Graduate Studies

I. The Department of History offers programs of study leading to the Master of Arts degree and the Doctor of Philosophy degree with a major in History.

II. M.A. Degree Program

The M.A. program of study in history is a flexible one which prepares students for a variety of careers. Students who regard the M.A. as a terminal degree normally elect to fulfill its requirements by 33 hours of course enrollment without writing a thesis. Most of these students go on to teaching positions on the secondary and community college level; a lesser number enter government service at all levels, and some secure specialized positions in business, industry, and journalism. Those students preparing for teaching on the university level or related careers

in research and writing should look upon the M.A. program as preparation for advanced graduate study. They are thus strongly urged to fulfill the requirements of the M.A. program by the preparation of a thesis.

A. Program Prerequisites

The student is required to have a minimum of 18 semester hours in undergraduate history. In special cases an exception may be made with the approval of the Graduate School and the Graduate Coordinator in History.

B. Program Requirements

1. A total of 33 hours for the student who elects not to write a thesis.

2. A total of 30 hours for the student who elects to write a thesis, with 6 hours of credit being assigned to the thesis.

3. No more than 21 hours may be taken in any one field of history (United States, Europe, Latin America).

4. No more than 9 hours may be taken at the 6000 level.

5. Normally 6 hours may be taken in a field outside history, with the approval of the student's adviser and the Coordinator of Graduate Studies. Under special circumstances students may petition for up to an additional 6 hours.

6. History 7000 and a 7070 seminar must be completed by the student. All students who do not write an M.A. thesis are required to complete an additional 7070 seminar.

7. A comprehensive examination over course work given by a committee chosen by the Graduate Adviser and the student, and approved by the Graduate Studies Committee.

8. Thesis approval by a department committee headed by the faculty member who directed the preparation of the thesis.

III. Ph.D. Degree Program

The Department of History also offers a program of study built upon the M.A. degree leading to the Ph.D. degree. The program is designed to provide wide knowledge in three fields, more intensive preparation in a fourth field, and professional competence in original research and writing that will prepare the student for teaching and research in higher education or for a career in government, business, library service, and other research related fields.

A. *Advising.* Students admitted into the Graduate School will be advised in the first enrollment by a faculty member assigned by the Coordinator of Graduate Studies. This enrollment does not, however, constitute a commitment by the Department of History to accept the student into the Ph.D. program. Formal admission into the program comes through the process described below. When the student is formally admitted into the program, the Coordinator of Graduate Studies will assign a permanent advisor.

B. *Program Admission.* No student will be admitted into the Ph.D. program who has not earned an M.A. or other advanced degree from an accredited institution. During the first semester of enrollment, following completion of the M.A., a student must apply to the Coordinator of Graduate Studies for formal admission into the Ph.D. program. The student will normally be expected:

1. To possess a grade point of 3.25 (on a 4.0 scale) for all graduate history work.

2. To submit scores on the Graduate Record Examination acceptable to the Department of History.

3. To pass a Qualifying Examination to determine the adequacy of the student's knowledge over past work and to determine strengths for the student's purpose of advising on further course enrollment. The Comprehensive Examination given to the student for the M.A. degree at The University of Memphis may, upon recommendation of the examining committee and in accordance with the policies recorded in the department's "Guide for Graduate Students in History at The University of Memphis", serve in lieu of the Qualifying Examination.

If the Graduate Studies Committee approves the admission of the student into the Ph.D. program, the Coordinator of Graduate Studies will formally notify the Graduate School Office of the student's "early doctoral" status in the program.

C. *Foreign Language.* The student must demonstrate reading proficiency in one foreign language. Proficiency will be demonstrated by the student's ability to read and interpret a selection from a historical work or source assigned by the dissertation committee. At the option of the student's dissertation director, the student may be required to demonstrate reading knowledge in two or more foreign languages.

D. *Fields of Study.* The student will choose, in consultation with the advisor, four fields of study. One will be designated the dissertation field. Normally the

student will complete approximately thirty semester hours of credit in this field, including twelve hours of dissertation. In each of the three minor fields, the student will complete approximately twelve to fifteen hours of credit. With the approval of the adviser, and the formal approval in writing of the Coordinator of Graduate Studies, the student may choose one minor field of study outside history. The fields in history are: Ancient, Medieval, Renaissance, Early Modern, Europe, Modern Europe, Britain, United States before 1877, United States after 1877, Latin America, Africa, China and Japan, Russia, and Near East.

E. Course Requirements. A student must complete a minimum of 60 semester hours of graduate course work beyond the bachelor's degree, excluding credit received for thesis and dissertation. At least 36 hours of regular course work must be taken in residence at The University of Memphis and be distributed among the fields of study in a way best suited to prepare the student for comprehensive examination. At least 12 hours of this enrollment must be in research seminars. History 8000 and History 8011, or their equivalent, are required of all students. History 8012 (Directed Readings) may be repeated for a total of 6 hours of credit, with an additional 6 hours permitted by petition to the Graduate Studies Committee. A student who makes a grade lower than B in more than 6 hours of course work will be dropped from the Ph.D. program.

F. Comprehensive Examination. When the course work has been essentially completed, the language requirement satisfied, and other foregoing requirements met, the student will take a Comprehensive Examination over all fields. The examination will be given by a Comprehensive Committee selected by the adviser and student and approved by the Graduate Studies Committee. The Comprehensive Committee should be composed of one faculty member from each minor field and two faculty members from the dissertation field. On the written part of the examination, six hours will be allotted to the dissertation field and four hours to each of the minor fields. Any part of the written examination not passed may be taken over one time. A second failure will result in a meeting of the Comprehensive Committee to determine if the student should be dropped from the program, or it may, by a 4/5 vote waive such a failure. A follow-up oral examination will be completed within a period of two weeks, but in exceptional cases, the Comprehensive Committee may extend the time.

G. Dissertation. To complete the requirements for the Ph.D. in History, the student must prepare a dissertation based on a substantial amount of original research and submitted in the acceptable form. The dissertation topic will be determined by the student in consultation with a faculty member in the dissertation field who agrees to direct the research. Formal approval of the dissertation will be given by a Dissertation Committee chaired by the director and composed of at least two other faculty approved by the Graduate Studies Committee. The student will be given a 12 hours of History 9000 credit for the dissertation.

E240 HISTORY (HIST)

6020. Internship in History. (3-12). Supervised internships working with various governmental agencies, private foundations or businesses of interest to historians. May be repeated for a maximum of 12 hours credit. **PREREQUISITE:** Permission of department.

6022. Oral History. (3). Applied history covering oral history theory, research, and interviewing procedures.

6050-69. Special Topics in History. (1-3). Intensive study of selected topics in History. Topics announced in *Schedule of Classes*.

6126. Victorian and Edwardian England. (3). Social, political, and cultural adjustments of England to the experience of industrialization in nineteenth and early twentieth centuries.

6145. History of Modern Germany. (3). Germany from the origins of the unification movement in the Napoleonic Era through the Second World War.

6160. Russia to 1917. (3). Russia from earliest times to 1917, with special emphasis on the rise of serfdom and autocracy and the evolution of the Revolutionary Movement.

6162. History of the Soviet Union. (3). The 1917 Revolution and the major developments in government economy, cultural and social life, and international affairs which followed.

6200. History of Spain. (3). Spanish institutions, culture and politics from ancient times to the present.

6240. History of Mexico. (3). Political, economic, social, and cultural development of Mexico from ancient times to the present.

6250. History of Brazil. (3). Political, economic, social, and cultural development of Brazil from early times to the present.

6260. The World Since 1945. (3). Global, ideological, economic and political developments since World War II. Emphasis on rising affluence of industrial free market, movement of former colonies to independence, and growth in diversity among the Soviet bloc nations.

6281. Africa South of the Sahara. (3). Major emphasis on black Africa in the nineteenth and twentieth centuries. The age of Imperialism and the impact of the West on Africa, the colonial policies of the European powers, the rise of the nationalist movements; the problems of newly independent nations; the role of African countries in world affairs.

6282. The History of North Africa. (3). Major emphasis on the nineteenth and twentieth centuries. The extension of European influence and control; the rise of nationalist movements; the role of these areas in world affairs.

6283. The History of Southern Africa. (3). The course of European colonization and its impact on the African people from 1652 to date in the Republic of South Africa, Rhodesia, and the former High Commission territories.

6292. History of Modern China, 1800 to the Present. (3).

6294. History of Modern Japan, 1800 to the Present. (3).

6295. Intellectual History of East Asia since 1800. (3). Evolution of modern Chinese and Japanese thought.

6320. Ancient Near East. (3). From the beginnings in Egypt and Mesopotamia to great 'oriental empires' (Assyria, Babylon, Persia).

6321. The Greek Experience. (3). Politics, society, and culture in ancient Greece to Alexander the Great.

6322. The Roman World. (3). Hellenistic kingdoms and Roman Empire.

6361. History of the Byzantine Empire. (3). Byzantine or East Roman Empire from 330 to 1453 and its influence on the Slavic, Turkic, and Islamic peoples.

6371. Early Middle Ages. (3). Late Roman Empire, the migration period, the emergence of Islamic, Byzantine, and West European cultures through the period of the Investiture Controversy.

6372. High Middle Ages. (3). Urban emergence, the growth of feudal monarchy, the foundations of modern political institutions, the medieval universities, and the intellectual fabric of scholasticism.

6380. Renaissance Europe, 1300-1520. (3). Transition from medieval to early modern institutions in Europe with emphasis on urban growth, capitalism, emergent nationalism, international diplomacy, and humanism.

6390. Europe in the Age of the Reformation. (3). Characteristic political, social, economic, intellectual, and cultural developments and the religious conflicts of the late fifteenth and sixteenth centuries.

6401. Europe in the Age of the Baroque. (3). Political crises, the development of monarchical absolutism, the rise of modern science, and the cultural synthesis in the seventeenth century.

6440. Era of the French Revolution. (3). Old Regime, origins and development of Enlightenment thought, and revolutionary and counter-revolutionary movements in 18th century Europe.

6453. Europe, 1815-1914. (3). Note: Students who have received credit for HIST 6451 or 6452 will not be allowed credit for HIST 6453.

6461. Europe, 1914-1945. (3).

6503. Disease, Medicine, and History. (3). How various diseases and the medical attempts to conquer them have influenced economic, political, and social action throughout history. Particular emphasis on significant work in the history of public health and on speculation about the importance of environmental factors in man's future.

6620. Colonial America to 1783. (3). Political development and economic, social and cultural institutions of English colonies in America, including origins and conduct of American Revolution.

6630. The New Nation, 1783-1815. (3). Note: Students who have received credit for HIST 6641 will not be allowed credit for HIST 6630.

6640. Jacksonian America, 1815-1850. (3). Note: Students who have received credit for HIST 6642 will not be allowed credit for HIST 6640.

6670. Civil War and Reconstruction, 1850-1877. (3). Note: Students who have received credit for HIST 6660 will not be allowed credit for HIST 6670.

6680. Emergence of Modern America, 1877-1914. (3).

6701. The United States, 1914 to the Second World War. (3).

6702. The United States, from the Second World War. (3).

6823. American Labor History. (3). Historical development of the labor movement in the United States. Emphasis on social, economic, and political trends related to the labor movement.

6824. Business History. (3). Historical development of business in the United States. Attention to social, economic, and political trends related to American business communities.

6831. History of American Family. (3). Analysis of changes in family size and structure and relationships between family and society from colonial times to present.

6851. History of Women in America. (3). Economic, political, social, and intellectual history of women in the English American colonies and the United States.

6861. Parks/People/Public Policy. (3). A comparative study of the history and administration of public land areas in the United States and of American conservation.

6863. History of Childhood in America. (3). Historical consideration of children and childhood in American society from early 17th century to present.

6871. United States Urban History. (3). Development of American cities, including formation of local social, economic, and political institutions and impact of urbanization on U.S.

6881. Black American History. (3). Role of Blacks in America from Jamestown to the present.

6882. Civil Rights Movement in the U.S. Since 1930. (3). Traces historical struggle for civil rights in the U.S. to present.

6941. History of the American Indian. (3). Role of the Indian in American History.

7000-8000. Introduction to Historical Research and Writing. (3). Mechanical techniques of historical composition, the nature and use of various kinds of historical source materials, bibliographical aids, and methods of historical synthesis. Required of all history majors.

7011-8011. Philosophy of History. (3). Speculative philosophy of history and recent problems in analytical philosophy of history.

7012-8012. Directed Readings. (1-3). Arranged on an individual basis. Master's candidates may take the course for 3 hours credit. May be repeated for a total of 6 hours credit by students admitted to doctoral program.

†7020-8020. Seminar for Teaching Assistants. (3). Overview and practical demonstrations of art of teaching history. Required of all graduate assistants.

†7021-8021. Colloquium for Graduate Assistants. (3). Supervision of and consultation with graduate assistants. For history students only. Credit not applicable to major. **PREREQUISITES:** HIST 7020-8020 and appointment as graduate assistant. May be repeated.

7030-39/8030-39. Topics in History. (3). Topics within periods or problems that cross periods or subject areas. May be repeated when topic varies.

7070-8070. Research Seminar. (1-3). Emphasis on original research and writing in topics drawn from the fields generally covered by the Studies courses. May

be repeated for credit with departmental approval. PREREQUISITE: HIST 7000.

The following Studies courses consist of readings and reports to survey the important literature on a period or its principal divisions. May be repeated with departmental permission.

7120-8120. Studies in English History. (3).

7160-8160. Studies in Russian History. (3).

7210-8210. Studies in Latin-American History. (3).

7270-8270. Studies in Near Eastern History. (3).

7280-8280. Studies in African History. (3).

7290-8290. Studies in Asian History. (3).

7320-8320. Studies in Ancient History. (3).

7370-8370. Studies in Medieval-Renaissance European History. (3).

7400-8400. Studies in Early Modern European History. (3).

7440-8440. Studies in Modern European History. (3).

7650-8650. Studies in U.S. History before 1877. (3).

7680-8680. Studies in U.S. History after 1877. (3).

7980-8980. Thematic Studies in American History. (3).

†7990-8990. Reading for Comprehensives. (1-6). Arranged on an individual basis for history students only. Credit not applicable to major. PREREQUISITES: Completion of all required course work toward degree or in the last semester of course work.

†7996. Thesis. (1-6). The student must write and defend satisfactorily a thesis on a subject approved by the major professor.

†9000. Doctoral Dissertation. (1-12). No more than 12 hours may be applied toward degree. PREREQUISITE: Admission to candidacy.

† Grades of S, U, or IP will be given.

MATHEMATICAL SCIENCES

RALPH J. FAUDREE, Ph.D., *Chair*
Room 373 Winfield Dunn Building

R. H. SCHELP, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Mathematical Sciences offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees with a major in Mathematics.

The areas of concentration for the M.S. degree are Applied Mathematics, Computer Science, Mathematics, and Statistics. Within the M.S. degree, students may complete up to twelve semester hours in a collateral area approved by their adviser.

The areas of concentration for the Doctor of Philosophy degree are Applied Statistics, Computer Science, and Mathematics.

II. M.S. Degree Program

Program Prerequisites

A. A score of at least 45 on the MAT or 800 on the GRE (verbal plus quantitative)

B. Two letters of recommendation

C. A minimum score of 550 on the TOEFL (for students whose native language is not English)

D. An undergraduate degree with a minimum GPA of 2.5 on a 4.0 scale

Program Requirements

A. At least 24 semester hours at the 7000 level

B. A passing grade on a written comprehensive examination

Each of the concentration areas has additional program prerequisites and requirements which are given below.

Mathematics Concentration

A. Prerequisite

An undergraduate degree with a major in mathematics or equivalent training.

B. Requirements

1. Satisfactory completion of 33 semester hours of graduate course work in a program approved by the department.

2. Satisfactory completion of at least 21 semester hours of graduate course work in mathematics (A typical program will include at least two of the following two course sequences: MATH 7350-7351, 7261-7262, 7411-7361).

Computer Science Concentration

A. Prerequisites

1. One year (8 semester hours) of calculus and one semester 3 semester hours of linear algebra (A student without the calculus and/or linear algebra prerequisites can be admitted on a provisional basis.)

2. Satisfactory completion of any one of the following sequences:

a. COMP 1900, 2150, 3160, 3230, 3420, 4040, 4030, 4270; MATH 2701

b. COMP 3160, 6002, 6003, 6040, 6030, 6270; MATH 6701

c. Courses equivalent to those listed in a or b above None of the courses above may be used to fulfill degree requirements.

B. Requirements

1. Satisfactory completion of 34 semester hours of graduate course work approved by the department

2. Satisfactory completion of a minimum of 22 semester hours of computer science graduate course work approved by the department. Among these courses there must be at least one course from each of the following areas:

a. Software: COMP 7041, 7111, 7112, 7270, 7272, 7274

b. Theory: COMP 7601, 7711, 7713, 7715, 7717, 7719, 7771, 7813

c. Applications: COMP 7115, 7116, 7120, 7310, 7311, 7312, 7313, 7720, 7740, 7820

Statistics Concentration

A. Prerequisites

Three semesters of calculus and one semester of linear algebra

B. Requirements

1. Satisfactory completion of 30 semester hours of graduate course work with a thesis or 33 semester hours of graduate course work without a thesis in a program approved by the department.

2. Satisfactory completion of at least 21 semester hours of graduate course work in statistics, including:

a. MATH 6613 and 7654

b. At least three of the following: MATH 6612, 7641, 7643, 7670

Applied Mathematics Concentration

A. Prerequisites

Undergraduate preparation which includes work in ordinary and partial differential equations, linear algebra, advanced calculus and numerical analysis (Students lacking this background may be admitted provisionally and be required to take one or more of the following courses: MATH 6391, 6242, 6350, 6721.)

B. Requirements

Satisfactory completion of at least 33 semester hours of graduate course work in a program approved by the department which includes MATH 7321, 7721, and 7995

III. Ph.D. Degree Programs

Program Prerequisites

A. A minimum score of 1000 on the GRE (verbal plus quantitative)

B. Three letters of recommendation

C. A score of at least 550 on the TOEFL (for students whose native language is not English)

D. An undergraduate degree in an appropriate discipline with a minimum GPA of 2.5 (on a 4.0 scale) or equivalent preparation

Program Requirements

A. A passing grade on a qualifying examination prior to the end of the first 13 months of study in the program

B. At least two consecutive semesters of residence as a full-time student

C. At least 42 semester hours in 7000 or 8000 level courses, with a minimum of 18 semester hours at the 8000 level

D. A passing grade on a comprehensive examination

E. Completion of an acceptable dissertation

F. A passing grade on a final examination given by a committee composed of departmental and university representatives

G. Each student must obtain approval of a program of study prior to the end of the first full year of study in the program

H. Satisfactory completion of concentration requirements which include:

Mathematics Concentration

Demonstration of reading proficiency in one foreign language – either French, German, or Russian

Applied Statistics Concentration

1. A minimum of eight courses in statistics and three courses from a minor area, all at the 7000 level or above; a minimum of two courses in each of computer science and mathematics (pure or applied) and one 7000 level course in mathematical sciences outside of statistics.

2. Presentation of an acceptable dissertation proposal within six months after passing the comprehensive examination.

Computer Science Concentration

1. Satisfactory completion of courses from at least two substantially different areas of computer science. In each area the student must complete a sequence of at least three courses.

2. Presentation of an acceptable dissertation proposal after passing the comprehensive examination.

The Ph.D. concentration in mathematics is designed so that students may pursue a traditional degree or may choose a more broadly based program aimed toward a college teaching career. Students may contact the department for more detailed information.

E285 COMPUTER SCIENCES (COMP)

6001. **Computer Programming.** (3) Algorithmic, problem solving, formalization of algorithms, stepwise refinement, the BASIC and FORTRAN programming languages: constants, variables, data types, arithmetic expressions, assignment statements, logical expressions, branching, iteration, subprograms and parameters, I/O, string manipulation, programming style. NOTE: Computer Science majors may not use COMP 6001 to fulfill degree requirements. PREREQUISITE: MATH 1211.

6002. **Accelerated Computer Programming.** (3). Principles of style and documentation: specification, algorithms, coding, and step-wise refinement; structured language; modularity; recursive procedures; programming of basic data structures including linked lists, stacks, queues, trees, and sets; basic sort and search algorithms; hashing. PREREQUISITE: MATH 1321. COREQUISITE: MATH 6701 or 4701.

6003. **Computer Organization and Assembly Language Programming.** (3). Binary signals, combinatorial and sequential logic networks: computer structure, memory, control, processing, and I/O units; instruction types and execution. Computer machine language: symbolic coding and assembly systems: design, coding, testing, tracing, and debugging. NOTE: Computer Science majors may not use COMP 6003 to fulfill degree requirements. NOTE: Credit for either COMP 3230 or COMP 3420 precludes credit for COMP 6003. PREREQUISITE: COMP 2150 or 6002.

6030. **Introduction to Algorithms.** (3). Abstract data types; asymptotic behavior of programs; basic paradigms in algorithm design: greedy, divide-and-conquer, dynamic programming, and graph traversal; string matching; garbage collection and compaction. PREREQUISITE: COMP 2150 or COMP 6002.

6040. **Programming Languages.** (3). Comparative features, syntax, and applicability of high-level programming languages such as FORTRAN, COBOL, PASCAL, SNOBOL, LISP, ADA, C, and FORTH data types and data structures and datflow, procedures, recursion, runtime environment, string manipulation, list processing, array processing, documentation, programming style. PREREQUISITE: COMP 2150 or 6002.

6041. **Introduction to Compilers.** (3). Finite state recognizers, lexical scanners, symbol tables, context-free methods such as recursive descent, LL(K), precedence, LR(K), SLR(K); language translation, generation and improvement of machine independent codes, inherited and synthesized attributes syntax-directed translation schema. PREREQUISITES: COMP 6003, 6040 and 6030.

6081. **Software Development.** (3-6). Program design methodologies: formal methods, datflow diagrams, strength and coupling measures; programmer teams, organization and management, scheduling and estimating, walk-throughs, program testing and documentation; organization, management and development of large-scale software project.

Repeatable, with permission, to 6 semester hours. PREREQUISITES: COMP 6040 and 6030.

6242. Introduction to Computer Graphics. (3). Characteristics of graphics I/O devices; 2D pictures, scaling, translation, rotation, windowing; drawing histograms, simple maps, block diagrams and flowcharts; curved lines, precision, quantization, interpolation, plotting equations; 3D pictures, scaling, translation, rotation, projections, hidden line problem, non-Euclidean geometry, animation. PREREQUISITE: COMP 3420 or 6003.

6270. Introduction to Operating Systems. (3). Hierarchy of storage devices, I/O buffering, interrupts, channels; multi-programming, processor and job scheduling, memory management; paging, segmentation, virtual memory; management of asynchronous processes: interrupt procedure calls, process stateword and automatic switch instructions, semaphores, concurrency; security and recovery procedures. PREREQUISITES: COMP 6003, 6040, and 6030.

6601. Introduction to Computability. (3). Basic models of computers as basis of understanding and analysis of programming, computation, and complexity; machine models (finite-state machines, Turing machines, FRAMS interconnection networks, neural networks, automata networks); data models; logical models (lambda calculus, grammars, recursive functions and predicates).

6711. Introduction to Mathematical Logic. (3). Propositional Logic and truth tables algorithms; first order calculus: terms, formulas, sentences, models, satisfaction, truth and logical validity; proof procedures and natural deduction, completeness and incompleteness theorems; applications to artificial intelligence, computer theorem proving, and verification of computer programs. PREREQUISITE: MATH 2701, 6701, or PHIL 3621 or permission of instructor.

6720. Introduction to Artificial Intelligence Programming. (3). Fundamentals of programming in LISP. Central ideas of artificial intelligence, including matching, goal reduction, constraint exploitation, search, and problem solving. PREREQUISITE: COMP 4040 or permission of instructor.

6730. Expert Systems Programming. (3). Fundamentals of programming in PROLOG, including data structures, backtracking, the cut, I/O, predicates, and debugging; central ideas of expert system development including knowledge representation, control structures, tools, and knowledge acquisition. PREREQUISITES: MATH 2701 and COMP 6030 or permission of the instructor.

6901. Individual Studies in Computer Science. (1-3). Directed individual study of selected areas of computer science. Repeatable by permission to 6 semester hours. PREREQUISITE: Permission of instructor.

†**COMP 6911. Internship in Computer Science. (1-6).** Practical experience in computer science. Students are placed with governmental or private organizations. Project must be approved and supervised by department faculty. Academic credit granted on certification of cooperating agency and acceptance by the supervising faculty of written report. May be repeated for total of six semester hours credit. PREREQUISITE: permission of instructor.

6990-6999. Topics in Computer Science. (1-3). Topics are varied and announced in *Schedule of Classes*. PREREQUISITE: Permission of instructor.

7041-8041. Compiler Design. (3). Translation of computer source language including compiling of interpreters, scanning and code generation, for arithmetic and Boolean expressions, arrays, conditional and iterative statements using recursive and nonrecursive compiling techniques. Construction of automated compiler given a source language in form of a context-free grammar and a target in the form of actions to be performed when rules of grammar are satisfied. PREREQUISITE: COMP 6041.

7111. Microcomputer Programming I. (3). Machine language and assembly language of selected microcomputer; characteristics of operating systems including standard maintenance and programming utilities; additional topics selected from hardware background, input-output interfacing, interrupt pro-

cessing, software development. PREREQUISITE: COMP 003 and 6030 or permission of instructor.

7112-8112. Microcomputer Programming II. (3). Additional selected topics in microcomputer programming; usually includes comparative study of a second microcomputer or operating system. PREREQUISITE: COMP 7111.

7115. Database Systems. (3). Hierarchical, network or relational database models are examined with respect to physical data organization, query languages, query optimization and security with emphasis on actual systems. PREREQUISITE: COMP 3160 and 6030.

7116-8116. Advanced Database Systems. (3). Design techniques for physical database design; indexing, hashing; methods that provide a formal basis for designing logical database relational model; entities and relationships, role or generalization, and aggregation; distributed data systems. PREREQUISITE: COMP 7115 or instructor's permission.

7120-8120. Cryptography and Data Security. (3). Ancient and modern cryptology and ciphers; security problems in computing; basic encryption and decryption; public-key cryptography, notions in security in computing environment; encryption, protocols; security for programs, OS's, data bases, PC's, networks and communication; legal, ethical, and human factors in computer security. PREREQUISITE: permission of instructor. MATH 2701 recommended.

7270-8270. Operating Systems. (3). (COMP 7271). Function, structure, and design parameters of computer operating systems. Time-sharing, multiprogramming, and multiprocessing considerations. Actual operating systems. Design methodology and evaluation techniques. PREREQUISITE: COMP 6270.

7272-8272. Parallel Processing. (3). Overview of parallel computer, including parallel architectures, parallel algorithms, parallel languages, parallel programming strategies, massively parallel computing, and case studies; programming system based on FORTRAN computer. PREREQUISITES: Knowledge of FORTRAN, C, or LISP and permission of instructor.

7274-8274. Distributed Computing. (3). Algorithms, data structures, programming languages, and strategies for problems using several processors in absence of single central controller; shared variables, message passing, concurrent languages, Petri nets, mutual exclusion, Byzantine agreement, clock synchronization, self-stabilizing systems, abort-commit protocols, network partitioning, leader election and common knowledge. PREREQUISITE: COMP 6270.

7310. Data Communications I. (3). Network structure and architecture; network topology; ISO Reference Model; physical layer, and datalink layer. PREREQUISITES: COMP 3420 or COMP 6003 or permission of instructor.

7311. Data Communications II. (3). Network Layer; Transport and Session Layers; Presentation Layer; Application Layer. PREREQUISITE: COMP 7310 or permission of instructor.

7312. Network Design and Analysis. (3). Evaluation of quantitative performance of data communication networks with respect to OSI reference model; analysis of practical network design issues through different problem formulations and solution techniques. PREREQUISITE: COMP 7310 or permission of instructor.

7313. Computer Performance Analysis. (3). Types of algorithm analysis; analysis of divide-and-conquer and greedy algorithms; backtracking and branch-and-bound algorithms; lower bounds; probabilistic analysis and approximation; basic parallel sorting and searching algorithms. PREREQUISITE: COMP 6270 or permission of instructor.

7514-8514. Cognitive Science Seminar. (3). Systematic study of current topics in Cognitive Science; student required to make presentations and prepare research paper or project. May be repeated for a maximum of 9 hours credit. No more than 3 hours may be applied to M.S. with computer science concentration. PREREQUISITE: Permission of instructor.

7515-8515. Complex Systems Seminar. (3). Systematic study of current topics in complex systems, including dynamical systems, chaos, fractals, cellu-

lar automata, and neural networks; class presentations and research paper or project required. May be repeated for maximum of 9 hours credit; no more than 3 hours may be applied to M.S. with concentration in computer science. PREREQUISITE: Permission of instructor.

7601-8601. Advanced Topics in Automata Theory. (3). Fine-grained models of parallel computation and discrete dynamical systems; linear cellular automata; injectivity and surjectivity of global dynamics; Moore-Myhill theorem; applications to pattern recognition and image processing and applications to discrete modeling in Physics and Chemistry; current models of connection machines in operation and their programming. PREREQUISITE: COMP 6601 or permission of instructor.

7711-8711. Logic Programming. (3). Theoretical foundations of Prolog; including models of logic programs, answer substitutions, fixpoint semantics, soundness and completeness of SLD-resolution, search procedures, negation as failure, and parallel logic programming. PREREQUISITE: COMP 6711 or COMP 6730, or permission of instructor.

7713-8713. Design and Analysis of Algorithms. (3). Asymptotic analysis and recurrence relations; analysis of divide-and-conquer, dynamic programming, and union-find algorithms; back-tracking and branch-and bound algorithms; reductions and NP-completeness; probabilistic algorithms and approximation; heuristic algorithms. PREREQUISITES: COMP 6002 and COMP 6030, or permission of instructor.

7715-8715. Computational Complexity. (3). Basic properties of RAM and Turing machine time and space complexity classes; reducibility and completeness; intractable problems and lower bounds, sample of NP Complete NP-hard problems, approximation algorithms for NP-hard problems; randomization and probabilistic complexity classes, oracles and relativization; interactive proofs, polynomial-time hierarchy; PSPACE-complete problems. PREREQUISITES: COMP 6601 or permission of instructor.

7717-8717. Computational Geometry. (3). Models and methods in combinatorial geometry; data structures and complexity; methods in geometric searching; convex hull algorithms; proximity problems and their generalizations; intersection problems; geometric duality. PREREQUISITES: COMP 6030 or permission of instructor.

7719-8719. Combinatorial Optimization. (3). Computational complexity; reductions, oracles and NP-completeness; five basic problems on convex sets in euclidean spaces; pivoting, ellipsoid, and basis reductions methods; optimization on graphs; matching and stable set polytopes; algorithms on perfect graphs. PREREQUISITES: COMP 7713 or COMP 7715, or permission of instructor.

7720-8720. Artificial Intelligence Programming. (3). Predicate calculus, theorem proving, knowledge representation including frames, primitive acts, and summary units, language understanding, image understanding, robotics, learning. PREREQUISITE: COMP 6720 or permission of instructor.

7740-8740. Neural Networks. (3). Background and history, fundamental structures, local and distributed representations, learning algorithms, concept processing, simulations and implementations, computational power, applications. PREREQUISITE: Permission of instructor.

7771-8771. Graph Algorithms. (3). Introduction to graphs, algorithms, and complexity; depth first search and breadth first search; algorithms for connectivity, biconnectivity, strong connectivity, minimum cost spanning trees, planarity testing, network flow, and matching; Eulerian and Hamiltonian cycle programs; coloring; exterior algorithms for TSP. PREREQUISITES: COMP 6030, or permission of instructor.

7813-8813. Design and Analysis of Parallel Algorithms. (3). (7718-8718). Overview of parallel models, including FRAMS, hypercubes, and cube-connected cycles; upper and lower bounds for sorting and searching; selection; network flow; probabilistic algorithms; efficient parallel algorithms and complexity classes. PREREQUISITES: COMP 6030 and 6601 or permission of instructor.

7820-8820. Pictorial Algorithms and Machine Vision (3). Image formation and sensing in vision systems; basic algorithms for processing continuous and discrete images; edge detection; shape detection vs. brightness, lightness, shading and color; reflectance maps; stereoscopic systems; pattern classification; representation problems; basic concepts and applications of computation geometry; passive navigation and motion planning. PREREQUISITE: COMP 7713 or permission of instructor.

7901-8901. Individual Studies in Computer Science. (1-4). Directed independent problem research and program design, writing and documentation in an area selected by student with approval of both advisor and supervising staff members. Repeatable by permission. PREREQUISITE: Permission of instructor.

7912. Computer Center Operations. (3). Major issues, topics and problems of computer center operations. Historical context, planning, systems development methodologies, selection of hardware and software, internal controls, privacy and security, project control, documentation standards and procedures, operational procedures. PREREQUISITE: Permission of instructor.

†7950. Computer Science Seminar. (1). Formal meetings, presentations, and discussion of current topics of interest. Students, faculty, and visiting colleagues participate.

†7996. Thesis. (3).

7990-99-8990-99. Advanced Topics in Computer Science. (1-3). Advanced topics and recent developments in computer science. Repeatable by permission. PREREQUISITE: Permission of instructor.

† Grades of S, U, or IP will be given.

E280 MATHEMATICS (MATH)

6010-19. Special Topics in Mathematics and Statistics. (1-3). Topics are varied and announced in Schedule of Classes. PREREQUISITE: Permission of instructor.

6171. Special Problems in Mathematics. (1-3). Directed individual study in a selected area of mathematics chosen in consultation with the instructor. Repeatable by permission of the Chair of the Department. PREREQUISITE: Permission of the instructor.

6240. Matrix Algebra. (3). Elementary operations, special classes of matrices, determinants, eigenvalues and eigenvectors; canonical forms, and elementary computer implementation. PREREQUISITE: Knowledge of Fortran and MATH 1321 or 1312.

6242. Linear Algebra. (3). Linear transformations polynomials, determinants, direct-sum decompositions diagonalizable operators, rational and Jordan form, inner product spaces, spectral theorem. PREREQUISITE: MATH 3242.

6261. Abstract Algebra. (3). Rings; integral domains; fields, groups- divisibility theory; real and complex numbers; polynomials. PREREQUISITE: MATH 2321.

6271. Combinatorics and Graph Theory. (3). Graphs; covering circuits, trees and searching, network algorithm, combinatorics; counting methods, generating functions, recurrence relations, inclusion-exclusion. PREREQUISITES: MATH 2322 and 2701.

6350. Introduction to Real Analysis I. (3). The real number system, functions and sequences, limits, continuity, differentiation; Riemann-Stieltjes integration, series of functions. PREREQUISITE: MATH 2322.

6351. Introduction to Real Analysis II. (3). Integration theory; Riemann and Lebesgue integrals; partial differentiation; implicit function theorem. PREREQUISITE: MATH 6350 or permission of instructor.

6361. Complex Variables. (3). Complex numbers, point sets and mappings; analytic functions; integration. PREREQUISITE: MATH 2322.

6381. Modern Applied Mathematics. (3). Symmetric linear systems, constraints and Lagrange multipliers, least squares and Kalman filter, discrete and continuous equilibrium problems, variational methods, and introduction to finite element methods.

PREREQUISITE: MATH 3391 and either 4240 or 3242 or permission of instructor.

6390. Ordinary Differential Equations. (3). Existence and uniqueness, linear and nonlinear systems, stability, classification of linear flows, boundary value problems, and numerical applications. PREREQUISITES: MATH 3391 and either 4240 or 3242.

6391. Partial Differential Equations I. (3). Laplace transforms; Fourier series; introduction to partial differential equations. PREREQUISITE: MATH 3391.

6392. Partial Differential Equations II. (3). Methods of characteristics; Greens functions; existence and regularity of solutions of boundary value and Cauchy problems. PREREQUISITE: MATH 6391.

6411. Topology. (3). Introductory set theory; metric spaces; topological spaces; mappings; Hausdorff spaces; connectedness and compactness. PREREQUISITE: MATH 4350.

6701. Mathematics for Computer Scientists. (4). Basic mathematical concepts applied to problem solving in computer science; (d)igraphs, trees; enumeration; recurrence relations; induction, basic probability and distributions; integer and modular arithmetic; random number generators; state sets and transition functions, finite-state machines; boolean algebra, and elementary logic. PREREQUISITE: MATH 1211. COREQUISITE: MATH 1321.

6721. Numerical Analysis. (3). Derivation and application of computer-oriented numerical methods for functional approximation, differentiation, quadrature, and the solution of ordinary differential equations. PREREQUISITES: MATH 2321 and knowledge of Fortran.

6741. Linear Programming Methods. (3). Theory of linear programming methods; problem formulation; convex sets; simplex and revised simplex methods; matrix games and linear programming. PREREQUISITES: MATH 3242 and COMP 1900 or their equivalents.

7010-19-8010-19. Special Topics in Mathematics (3).

†7011-8011. Practicum in College Teaching of Mathematics. (Variable and Repetitive Credit). The methods and techniques of teaching mathematics at the college level; supervised instruction conferences, group discussions, students will participate in current research projects in mathematics methodology. PREREQUISITE: Permission of the instructor.

7235-8235. Combinatorics. (3). (MATH 7793007). Principles and techniques of combinatorial mathematics with a view toward applications in computer science. Methods of enumeration, matching theory, paths and cycles, planarity, coloring problems, extremal problems. PREREQUISITE: Permission of instructor.

7236-8236. Applied Graph Theory. (3). Applications of directed and undirected graphs to problems in various disciplines: chemistry, computer science, electrical engineering, linguistics, operations research, social sciences. PREREQUISITE: MATH 6242 or permission of instructor.

7237-8237. Graph Theory. (3). Connectivity, Euler tours and Hamilton cycles, matchings, coloring problems, planarity and network flows; study of classical theorems due to Brooks, Menger, Kuratowski, Schur, Tutte, and Vizing. PREREQUISITE: MATH 6242 or permission of instructor.

7241. Linear Algebra. (3). Vector Spaces; linear transformations and functionals; determinants; rational and Jordan forms; inner product spaces; bilinear forms; PREREQUISITE: MATH 6242.

7261. Algebraic Theory I. (3). Studies in group theory and ring theory, including Sylow theory and factorization theory. PREREQUISITE: MATH 6261.

7262. Algebraic Theory II. (3). A continuation of MATH 7261. Studies in field theory and modules, including free algebras, Galois theory, tensor products. PREREQUISITE: MATH 7261.

7290-99-8290-99. Topics in Algebra. (3). Topics are varied and announced in *Schedule of Classes*. PREREQUISITE: Permission of instructor.

7311-8311. Topics in Analysis. (1-3). Repeatable by permission. PREREQUISITE: MATH 7350.

7321. Modeling and Computation. (3). Introduction to process of formulating, solving, and interpreting mathematical models of real phenomena; both formal analysis and numerical techniques for variety of models. PREREQUISITE: MATH 3391, 6721.

7350. Real Variables. (3). σ -algebra, outer measure, Lebesgue measure, measurable functions, differentiation, absolute continuity, L_p -spaces. PREREQUISITE: MATH 6351.

7351. Real Variables II. (3). Metric spaces, Baire category theorem, Hahn Banach theorem, uniform boundedness principle, closed graph theorem, general measure, signed measures, Radon-Nikodym theorem, product measures, Fubini theorem. PREREQUISITE: MATH 7350.

7355-8355. Functional Analysis I. (3). Vector spaces Banach spaces, Hilbert spaces; linear functionals and operators in such spaces; spectral theory. PREREQUISITE: MATH 7350.

7356-8356. Functional Analysis II. (3). A continuation of MATH 7355-8355. PREREQUISITE: MATH 7355-8355.

7361. Complex Analysis. (3). Analytic functions, power series, mapping properties, complex integration, Cauchy's theorem and its consequences, sequences of analytic functions. PREREQUISITE: MATH 6351.

7371. Calculus of Variations. (3). Introduction to calculus of variations, including applications to problems in science, engineering, and economics. PREREQUISITE: Permission of instructor.

7375. Methods of Mathematical Physics I. (3). Vector spaces, matrices, tensors, vector fields, function spaces, differential and integral operators, transform theory, partial differential equations. PREREQUISITE: MATH 3391, 4242 and 4350 or permission of instructor.

7376. Methods of Mathematical Physics II. (3). Complex variables, asymptotic expansions, special functions, calculus of variations, additional topics on matrices and operators, topics in non-linear analysis. PREREQUISITE: MATH 7375 or permission of the instructor.

7393-8393. Differential Equations and Applications. (3). The concepts of stability and periodic oscillation are examined for systems that arise in harmonic oscillation, population dynamics, circuit theory, mechanics, ecology, epidemics and other areas that depend on the interests of the class. PREREQUISITE: MATH 3391 or consent of instructor.

7395-8395. Theory of Differential Equations. (3). Linear and nonlinear systems, Poincare-Bendixson theory, Liapunov's direct method, fundamental properties of solutions including existence and uniqueness, and applications. PREREQUISITE: MATH 6350 and 6242.

7411. Point Set Topology. (3). An axiomatic approach to compactness, separability, connectedness, metrizable and other topological properties. PREREQUISITE: MATH 6411.

7412-8412. Topics in Topology. (3). PREREQUISITE: MATH 7411.

7721. Advanced Numerical Analysis. (3). A continuation of Mathematics 6721; specialized methods and techniques in field of numerical analysis. PREREQUISITE: MATH 6721.

7821-8821. Special Problems in Mathematics. (1-3). Directed individual study in a selected area of mathematics chosen in consultation with the instructor and the student's adviser. Repeatable by permission. PREREQUISITE: Permission of the instructor.

7921-8921. Special Problems in Differential Equations. (1-3). Repeatable by permission. PREREQUISITE: MATH 7393.

7922-8922. Special Problems in Applied Mathematics. (1-3). Repeatable by permission. PREREQUISITE: Permission of the instructor.

7995. Project in Applied Mathematics. (1-3). Mathematical modeling problem related to science or industry, selected in consultation with a faculty advisor, and leading to final report. Repeatable by permission. PREREQUISITE: MATH 7321.

†7996. Thesis. (3-6).

8811. **Advanced Seminar in Mathematics.** (1-3). PREREQUISITE: permission.

†9000. **Dissertation.** (1-9). Independent research for the Ph.D. degree.

MATHEMATICS COURSES FOR SECONDARY SCHOOL TEACHERS (MATH)

6151. **History of Mathematics.** (3). The development of mathematics from the earliest times to the present; problem studies; parallel reading and class reports. PREREQUISITE: MATH 2321 or its equivalent.

7171. **Workshop in Junior High Mathematics.** (3). This course is designed to provide in-service training, with emphasis on new course content.

7174. **Workshop in Senior High Mathematics.** (3). This course is designed to provide in-service training, with emphasis on transformation geometry.

7281. **Linear Algebra for Teachers.** (3). Euclidean n-space; vector spaces; subspaces; linear independence and bases; linear transformations; matrices; systems of linear conditions; characteristic values and vectors of linear transformations. PREREQUISITE: MATH 7381.

7282. **Abstract Algebra for Teachers.** (3). A basic abstract algebra course designed especially for teachers. Topics will include: groups, rings, integral domains, fields; an axiomatic approach to the development of algebra; concepts of proof. PREREQUISITE: College Algebra.

7381. **Introduction to Analysis I.** (3). Properties of real number system; elementary functions; plane analytic geometry; nature of the derivative; techniques of differentiation; periodic functions; differentiation of trigonometric functions; applications of the derivative; concepts of integration. PREREQUISITE: MATH 1211 or MATH 1213.

7382. **Introduction to Analysis II.** (3). Continuation of MATH 7381; definite integral with applications; integration of elementary transcendental functions; techniques of integration; indeterminate forms and improper integrals; infinite sequences and infinite series with tests for convergence. PREREQUISITE: MATH 7381 or equivalent.

7681. **Probability for Secondary Teachers.** (3). Probability spaces, theory of statistical inference physical interpretations of probability. PREREQUISITE MATH 1211.

STATISTICS (MATH)

6611. **Basic Concepts of Statistical Methods.** (3). Binomial, hypergeometric, Poisson, multinomial and normal distributions; test of hypotheses, chi-square test, t-tests, F-test, etc.; nonparametric tests; correlation analysis. PREREQUISITE: 6 hours in Mathematics at level of MATH 1211 or above. NOTE: Students majoring in Mathematical Sciences may not apply credit for this course to their degree requirements. Students majoring in other areas such as Physics or Engineering and who have a calculus background should take MATH 6635.

6636. **Introduction to Statistical Theory.** (3). Sample distributions, transformations of random variables, central limit theorem, law of large numbers, unbiasedness, least squares estimations, maximum likelihood estimations, confidence intervals, most powerful tests, Neyman-Pearson lemma, likelihood ratio tests. PREREQUISITE: MATH 4635 or MATH 6635.

6637. **Statistical Methods.** (3). Basic concepts of hypothesis testing; comparisons of two population means, proportions, and variances; analysis of variance; completely randomized designs, randomized block designs, Latin square designs; multiple comparisons; simple linear model and multiple regression; analysis of covariance. PREREQUISITE: MATH 6611 or 6635.

6614. **Applied Probability and Queuing Theory.** (3). Probability and random variables, discrete and continuous probability distributions, stochastic processes, queuing theory, applications of probability and queuing theory to computer systems. NOTE:

Students may not receive credit for both MATH 6614 and MATH 6635. PREREQUISITES: MATH 2321, MATH 2701, and COMP 1900.

6631. **Probability.** (3). Basic concepts in probability; probability models; applications. NOTE: Students majoring in Mathematical Sciences may not take MATH 6631 for credit.

6635. **Introduction to Probability Theory.** (3). Basic probability theory, random variables, discrete and continuous probability distributions, functions of one or more random variables, multivariate distributions including multinomial and bivariate normal distributions. NOTE: Students may not receive credit for both MATH 6635 and MATH 6614. PREREQUISITE: MATH 2322.

6640. **Introduction to Probability Models.** (3). Basic concepts of discrete Markov chains; branching processes; Poisson processes; applications to modeling of the population growth; application to modeling of the spread of infectious disease. PREREQUISITE: MATH 6635.

7613. **Probability Theory.** (3). Probability measures; distribution functions; independence; mathematical expectation, modes of convergence. Borel-Cantelli Lemma, Weak and Strong Laws of Large Numbers; Glivenko-Cantelli Lemma. Characteristic Functions Inversion Theorems; Slutsky's Theorem. Central Limit Theorem; Liapounov and Lindberg-Levy and Lindberg-Feller Theorems; Multivariate Extensions. Berry-Esseen Theorem. PREREQUISITES: MATH 6350. Knowledge of MATH 6613 recommended.

7641. **Analysis of Variance.** (3). Basic principles and mathematical models, fixed effects models, F-test and multiple comparison procedures, random effects models, testing, estimation and approximate confidence intervals of variance components, mixed effects models, randomization models, robustness of F-test, analysis of covariance. PREREQUISITE: MATH 6635; COREQUISITE: 6636.

7642-8642. **Experimental Design.** (3). Fundamental concepts in designing experiments, justification of linear models, randomization, principle of blocking, use of concomitant observations, principle of confounding, fractional replication, composite designs, incomplete block designs. PREREQUISITE: MATH 7641 or 7643.

7643. **Least Squares and Regression Analysis.** (3). Simple, multiple regression analysis, best model selection, Mallows' Cp, examination of residuals, Box-Cox Transformation, influence diagnostics, multicollinearity, non-linear regression, computer statistical packages. PREREQUISITE: MATH 6635; COREQUISITE: 6636.

7645. **Sampling Techniques.** (3). Planning, execution, and analysis of sampling from the finite populations; simple, stratified, multistage cluster and systematic sampling; ratio and regression estimates, estimation of variance. PREREQUISITE: MATH 6635; COREQUISITE: MATH 6636.

7647. **Nonparametric Statistical Methods.** (3). Use of distribution-free statistics for estimation, hypothesis testing, and correlation measures in designing and analyzing experiments. PREREQUISITE: MATH 6635; COREQUISITE: MATH 6636.

7651-8651. **Theory of Linear Models.** (3). Quadratic forms, point and interval estimation, multivariate normal distribution; linear models; general linear hypothesis of full rank computing techniques; functional relationships. PREREQUISITE: MATH 6636 and 7654.

7654. **Inference Theory.** (3). Bayes and maximum likelihood estimators, sufficient statistics; Rao-Blackwell Theorem, random sampling distributions; unbiasedness, completeness and UMVU estimators; efficient estimators; Cramer-Rao inequality; simple Robust estimators;UMP-tests; likelihood ratio tests, t-tests and F-tests. PREREQUISITE: MATH 6636.

7656-8656. **Advanced Techniques in Statistical Inference.** (3). Limit theorems; uniformly minimum variance unbiased and maximum likelihood estimators; information inequalities; large sample theory; Robust estimators; uniformly most powerful unbiased and invariant tests; sequential and Robust tests. PREREQUISITE: MATH 7654.

7657-8657. **Multivariate Statistical Methods.** (3). Basic contents: Multivariate normal distributions; Wishart distribution, Hotelling-T₂, Matrix-T and Beta distributions; generalized regression models and growth curve models; multivariate analysis of variance; principal component analysis; discriminant analysis; factor analysis; curve fitting procedures in multivariate cases. All topics will be illustrated by practical examples. PREREQUISITE: MATH 6636 or permission of the instructor.

7660-8660. **Applied Time Series Analysis.** (3). Basic concepts and examples of stationary and nonstationary time series. Random harmonic analysis. Spectral density functions, model building procedures for time series models. Model identification. Diagnostic checking, smooth, forecasting and control. Box-Jenkins approach of time series analysis. Some seasonal models. PREREQUISITE: MATH 6636.

7670-8670. **Applied Stochastic Models.** (3). Markov chains with discrete time. Classification of states, stationary distributions, absorption probabilities and absorption time. Markov chains with continuous time. Birth-death processes. Waiting time distributions. Queuing models. Population growth models. Kolmogorov forward and backward equations. Diffusion processes. Fokker-Planck equation. Applications to genetic problems, etc. PREREQUISITES: MATH 6636 and 6640.

7671-8671. **Individual Studies in Statistics.** (1-3). Directed individual study of recent developments in statistics. Repeatable by permission. PREREQUISITE: Permission of the instructor.

7672-8672. **Special Problems in Statistics.** (1-3). (6671). Recent developments in statistical methods and applications. PREREQUISITE: Permission of the instructor.

7680-8680. **Bayesian Inference.** (3). Nature of Bayesian inference. The formulation and choice of prior distributions. Advantages and disadvantages of Bayesian Approach. The applications of Bayesian approach to Behren-Fisher problems, to regression analysis and to the analysis of random effect models. The applications of Bayesian approach to the assessment of statistical assumptions. Bayesian prediction procedures. PREREQUISITE: MATH 6636.

7685-8685. **Statistical Computing.** (3). Uniform random number generation and testing, generation of non-uniform random variables, approximating tail probabilities and percentage points in common distributions, computational methods for multiple regression analysis. PREREQUISITE: MATH 6636 and knowledge of FORTRAN.

7691-8691. **Seminar in Statistical Research.** (1-3). Recent developments in statistical methods and their applications. Basic topics cover "multivariate method," growth curve models, robustness and effects of departure from basic statistical assumptions on common inference procedures, multivariate contingency tables, bioassay, etc. PREREQUISITE: MATH 6636.

7692-8692. **Statistical Consulting.** (3). Methods and techniques of statistical consulting; students will participate in consulting practice supervised by graduate faculty in statistics. May be repeated for a total of 6 credit hours. PREREQUISITES: MATH 6611 and MATH 6637.

† Grades of S, U, or IP will be given.

PHILOSOPHY

NANCY SIMCO, Ph.D., *Chair*
Room 327, Clement Hall
MARK TIMMONS, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Philosophy offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees with a major in Philosophy. The Master's program is designed to provide comprehensive training in philosophy for students seeking work beyond the bachelor's level, whether for self-enrichment, background for other areas, or in preparation for doctoral work. The Ph.D. program provides students with the broad background necessary for effective teaching as well as the

specialized research skills required for a career in philosophy at the college or university level.

II. M.A. Degree Program

A. Program Admission

Students desiring admission to the graduate program in philosophy should correspond with the Coordinator of Graduate Studies in Philosophy as early as possible in the admission procedure, and as far in advance as they can before the semester in which they plan to enter.

B. Program Prerequisites

1. A bachelor's degree from a recognized college or university.
2. A minimum of a 2.5 quality point average on a scale of 4.0. Students with less than a 2.5 quality point average may, on occasion, be granted probationary admission.
3. An acceptable score on the general aptitude portion of the Graduate Record Examination or the Miller's Analytic Test.
4. At least 18 semester hours in undergraduate philosophy courses including the following courses or their equivalent: introduction to philosophy, ethics, elementary logic, intermediate logic, history of ancient philosophy and history of modern philosophy. Students who lack one or more of these courses may be admitted to the program only on the condition that they take the appropriate course as soon as possible.
5. Three letters of recommendation from people qualified to judge the student's ability to undertake graduate work. Form letters for this purpose should be obtained from and returned to the Coordinator of Graduate Studies in Philosophy.

C. Program Requirements

1. Thirty to thirty-three hours of class work, 23 of which must be at the 7000 level or above. Students who write a thesis are required to take 30 hours, 3 of which are credit for the thesis. Students who do not write a thesis are required to take 33 hours. Students with approved collateral areas may take up to six hours outside the department if they are writing a thesis or nine hours if they are not.
2. A written comprehensive examination covering the major areas and history of philosophy.

III. Ph.D. Degree Program

A. Program Admission

1. Fulfillment of university requirements for admission to the Graduate School, including a score on the GRE acceptable to the department.
2. The equivalent of the B.A. degree, usually with a major in philosophy. This must include at least the following courses or their equivalents: Intermediate Logic, Survey of Ancient Philosophy, Survey of Modern Philosophy, and Ethics. Students lacking one or more of these courses may be admitted to the program provisionally, on the condition that they make up the missing course work as soon as possible (graduate credit will not be granted for make-up work).
3. Three letters of recommendation, to be submitted by persons competent to judge the prospective student's ability to undertake graduate work. (These letters are to be sent directly from the referee to the department's coordinator of graduate studies.)
4. Transcripts of prior academic work. Separate copies should be sent both to the Graduate School and the department's director of graduate studies. A minimum GPA of 3.00 (on a scale of 4.00) will be expected.

B. Retention Requirements

A student will be retained continuously in the program until completion of the degree providing the following conditions are met:

1. All students will be required to maintain a GPA of at least 3.5. Should the student's GPA fall below that mark, a period of one semester will be allowed to correct the deficiency. At the discretion of the chair and the coordinator of graduate studies, this period may be extended one additional semester.
2. Students will be expected to demonstrate satisfactory progress in fulfilling the graduation requirements outlined below.

C. Graduation Requirements

1. General Requirements

- a. Each student must earn at least 72 credit hours above the Bachelor's degree. No more than 6 hours granted for work on the dissertation may be used to attain the required 72 hours.
- b. At least 60 credit hours must be earned at the 7000 level or higher.

2. Residency Requirements

At least 24 credit hours must be earned while the student is in continuous residence in the program.

3. Distribution Requirements

a. Core Requirements

Students must take a core of twelve hours in major figures in the history of philosophy (at least three in ancient and three in modern); six hours in theoretical philosophy; and six hours in practical philosophy, three of which must be in ethics.

b. Additional Requirements

Students must take the proseminar, normally during the first semester of graduate work; those who have not had an advanced logic course will be expected to take one; at least one course must be a systematic study of a major figure. At least two courses must be in the analytic tradition, and two in the continental tradition; these will normally be courses in the twenty-four hour core.

4. Examination Requirements

a. Qualifying Examinations

Qualifying examinations are taken in September of the student's second year. They consist of two four-hour written examinations, one in the history of ancient philosophy and one in the history of modern philosophy. A general reading list is provided for each area. Only students who pass the qualifying examination may continue work for the Ph.D.

Note: It is expected that the doctoral qualifying examination will be coordinated with the master's comprehensive examination, so that those whose scores fail to qualify them for advanced doctoral study but are sufficient for the master's degree may then complete the requirements for a terminal master's degree.

b. Area Examinations

Area examinations are taken in September of the student's third year. They consist of two four-hour written examinations, one in the metaphysics/epistemology and one in ethics/social-political philosophy. A general reading list is provided for each area. Only students who pass the area examinations may continue work for the Ph.D.

5. Language Requirements

Students must demonstrate sufficient ability to translate philosophical texts by sitting for a two-hour translation examination in two of the following languages: French, German, Classical Greek, Latin. Other languages may be substituted if they are shown to be relevant to the student's course of study.

6. Dissertation Requirements

- a. Dissertation Committee. The student must select a dissertation director and a reader from outside the philosophy department. The coordinator of graduate studies in consultation with the graduate faculty will select two additional readers from within the department.
- b. Dissertation Proposal Defense. The student will submit a proposal for the dissertation to the committee and defend the proposal before the graduate faculty. This defense will normally occur before the end of the sixth semester.
- c. Dissertation Defense. The dissertation committee will schedule a defense of the completed dissertation in coordination with the chair and the coordinator of graduate studies. Notice will be given, copies of the dissertation made available, and a public oral defense of the dissertation will be held. Upon approval of the dissertation committee and barring objections, the dissertation will be submitted to the Graduate School and the degree awarded.

E330 PHILOSOPHY (PHIL)

6211. Studies in Ancient Philosophy. (3). Readings from primary sources, supplemented by commentary from antiquity and modern scholarship, including Pre-Socratics, Plato, Aristotle, and the Hellenistic period. May be repeated for maximum of 9 hours credit with permission of graduate coordinator.

6311. Studies in Modern Philosophy. (3). Readings from major philosophers of 17th to early 19th centuries, supplemented by commentaries from modern and contemporary sources. May be repeated from maximum of 9 hours credit with permission of graduate coordinator.

6422. Recent Anglo-American Philosophy. (3). An examination of major developments in philosophy in England and the United States from 1900 to present with reading from such philosophers as Russell,

Moore, Ayer, Wittgenstein, James, Dewey, Lewis, Quine and other contemporary authors.

6441. Recent Continental Philosophy. (3). Major figures in 20th century European thought; movements such as phenomenology, existentialism, structuralism, critical theory, and hermeneutics. May be repeated for maximum of 9 hours credit with permission of graduate coordinator.

6632. Advanced Logic. (3). The nature of axiomatic systems, and foundations of mathematics.

6551. Social and Political Philosophy. (3). Theories of society, culture, institutions, government, law, power, authority, rights, and obligation.

6662. Philosophy of the Social Sciences. (3). Scientific character peculiar to social (rather than natural) sciences by virtue of their special subject-matter: humans and society; meaning, understanding vs. explanation, rationality and the nature of social institutions.

6711. Philosophy of Religion. (3). Philosophical issues raised by religious experience including classical and contemporary arguments for and against existence of God, meaningfulness of religious language, and concepts of faith, evil and immortality.

6801-20. Special Topics in Philosophy. (3). Topics in areas of epistemology, metaphysics, philosophy of language, philosophy of mind, logical theory, axiology. Area to be covered will be in the *Schedule of Classes*. May be repeated for a maximum of 15 hours credit.

†7001-8001. Proseminar. (3).

Topics vary in all of the following courses. They are announced in the Schedule of Classes and described in the departmental course outline booklet. These courses may be repeated for credit if not to improve a previous grade.

7020-8020. Seminar in Major Figures. (3).

7030-8030. Seminar in Continental Philosophy. (3).

7080-8040. Seminar in Normative Philosophy. (3).

7051. Seminar in Systematic Philosophy. (3).

7201-8201. Seminar in Classical Philosophy. (3).

7203-8203. Seminar in Contemporary Philosophy. (3).

7241-8241. Seminar on Plato. (3).

7252-8252. Seminar on Aristotle. (3).

7301-8301. Seminar in Modern Philosophy. (3-6).

7332-8332. Seminar in the Philosophy of Religion. (3).

7361-8361. Seminar on Descartes. (3).

7372-8372. Seminar on Kant. (3).

7414-8414. Seminar in Metaphysics. (3).

7421-8421. Seminar in Epistemology. (3).

7442-8442. Seminar on Heidegger. (3).

7451-8451. Seminar on Wittgenstein. (3).

7541-8541. Seminar in Social and Political Philosophy. (3).

7551-8551. Seminar in Ethical Theory. (3).

7642-8642. Seminar in Philosophy of Logic. (3).

7671-8671. Philosophy of Science. (3).

7761-8761. Seminar in Philosophy of Art. (3).

7800-7810-8800-8810. Special Topics in Philosophy. (3).

†7994. Reading and Research. (1-9).

†7996. Thesis. (1-9).

8051. Colloquium on Philosophical Problems. (3).

8061. Current Research Topics. (1-3).

†8071. Research in Progress Seminar. (1-12).

†8994. Advanced Reading and Research. (1-12).

†9000. Dissertation. (1-12).

† Grades of S, U, or IP will be given.

PHYSICS

MICHAEL M. GARLAND, Ph.D., *Chair*
Room 216 Manning Hall
 M. SHAH JAHAN, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Physics offers a major in Physics for the Master of Science degree.

A. M.S. Degree Program

1. Program Admission

Students majoring in Physics for the Master of Science degree are required to present as a prerequisite 20 semester hours of undergraduate physics courses including upper division Mechanics, Electricity and Magnetism, and approved Mathematics courses in Calculus and Differential Equations.

B. Program Requirements

1. After meeting the general degree requirements for admission to The Graduate School, students selecting Physics as a major will be assigned to the Graduate Committee, which must approve and direct their course of study.

2. Students may elect either a thesis or non-thesis program.

3. If a thesis program is selected the following minimum requirements must be satisfied.

a. 18 semester hours of physics courses numbered 7000 or above, including PHYS 7100, 7200, 7300, and 7520.

b. Sufficient additional courses including 3-6 semester hours in PHYS 7396. Thesis, to satisfy a minimum of 30 semester hours (9 semester hours may be in a collateral field of study).

c. Satisfactory completion of a comprehensive written examination.

d. Complete a research project, submit a written thesis describing the research, orally present and defend the thesis before a faculty committee.

4. If a non-thesis program is selected the following minimum requirements must be satisfied.

a. 21 semester hours of physics courses numbered 7000 or above, including PHYS 7100, 7200, 7300, and 7520.

b. Sufficient additional courses to satisfy a minimum of 33 semester hours in which 9 may be in a collateral field of study.

c. Complete a survey of an area of current research in fundamental or applied physics and make an oral and written presentation based on this survey before a faculty committee. The subject of this survey must be approved by the departmental graduate committee at least one semester prior to graduation.

d. Satisfactory completion of a comprehensive examination.

E350 PHYSICS (PHYS)

6000-09. **Special Topics in Physics.** (3). Selected topics of current interest in physics. Topics are varied and announced in *Schedule of Classes*.

6051. **Astrophysics.** (3). Application of radiation laws to the interpretation of stellar structure. Introduction to radiative transfer in atmospheres. The spectral and luminosity classification of stars, stellar populations and evolution. *Three lecture hours and occasional observation periods per week.*

6110. **Nuclear Physics.** (3). Properties of atomic nuclei, radioactive transitions, alpha, beta and gamma decay. Binding energy, nuclear forces and nuclear models.

6211. **Optics.** (3). Geometrical and physical optics including such topics as thin lenses, spherical mirrors, lens aberrations, optical instruments, waves interference, diffraction, absorption, transmission, and scatterings. *Three lecture, three laboratory hours per week.* PREREQUISITE: PHYS 3212 or equivalent.

6410. **Introduction to Quantum Theory.** (3). Experimental basis of quantum theory; development of the Schrodinger equation and its solution for simple systems; selected applications in atomic and molecular structure. *Three lecture hours per week.*

6510. **Thermodynamics.** (3). A mathematical treatment of thermodynamics, including such topics as work, energy, enthalpy, entropy, reversible and irreversible processes, equilibria, specific heats, and

phase transitions. *Three lecture hours per week.* RECOMMENDED PREREQUISITE: PHYS 3112 or 3212.

6610. **Solid State Physics.** (3). Consideration of such topics as lattice vibrations, specific heats, electrical and thermal conduction in solids, magnetism. *Three lecture hours per week.*

7010. **Fundamental Concepts of Classical Physics for Teachers.** (3). Basic concepts of Newtonian mechanics, heat and sound. Emphasis on increasing understanding in classical physics, providing demonstrations of physical principles suitable for classroom use and designing and performing laboratory experiments. Credit does not apply toward a major or minor in chemistry or physics.

7011. **Physics Practicum I.** (1). Practicum or laboratory experiments, laboratory techniques, laboratory management and supervised experience in presenting demonstrations with emphasis on concepts covered in Physics 7010. *Two laboratory hours per week* COREQUISITE: PHYS 7010.

7020. **Fundamental Concepts of Contemporary Physics for Teachers.** (3). Basic concepts of electricity and magnetism, optics, atomic and nuclear physics. Laboratory experience. Credit does not apply toward a major or minor in chemistry or physics.

7021. **Physics Practicum II.** (1). Continuation of Physics 7011 with emphasis on concepts covered in Physics 7020. *Two laboratory hours per week.* COREQUISITE: PHYS 7020.

7030. **Fundamental Concepts of Modern Physics for Teachers.** (3). Basic concepts of modern physics, special relativity, solid state physics, particle physics, and space technology. Background in physics recommended. Credit does not apply toward a major or minor in chemistry or physics.

7031. **Physics Practicum III.** (1). Continuation of Physics 7021 with emphasis on concepts covered in Physics 7030. *Two laboratory hours per week.* COREQUISITE: PHYS 7030.

7050-59. **Special Topics in Advanced Physics.** (3-6). Selected topics in advanced physics. Topics are varied and announced in *Schedule of Classes*.

7060. **Individual Study in Advanced Physics.** (1-3). Independent investigation of an area of advanced physics under supervision of a Physics faculty member. Written report required. PREREQUISITE: permission of chair. Course may be repeated for a maximum of six hours credit.

7070. **Fundamental Concepts in Astronomy for Teachers.** (3). Observational astronomy, the solar system, stars and stellar evolution, galaxies and cosmology. Occasional night observations may be held. Credit does not apply toward a major or minor in physics or chemistry.

7100. **Classical Mechanics.** (3). An analytical study of mechanics of particles and rigid bodies by Lagrange's, Hamilton's and Hamilton-Jacobi methods. The special theory of relativity, canonical transformation, and Poisson brackets are among the concepts emphasized.

7200. **Quantum Mechanics I.** (3). Physical principles and mathematical formalism of quantum theory, with emphasis on applications in atomic, molecular and solid state physics, scattering theory and absorption and emission of electromagnetic radiation. PREREQUISITE: PHYS 6410 or equivalent.

7201. **Quantum Mechanics II.** (3). Continuation of PHYS 7200; scattering theory, quantum dynamics, spin, perturbation methods and Hartree-Fock. PREREQUISITE: PHYS 7200.

7210. **Relativistic Quantum Mechanics.** (3). Quantum mechanics of relativistic particles including the Dirac equation, relativistic covariance, solutions for free particles, particles in electromagnetic fields, particles in central fields, methods of approximation and massless particles. *Three lecture hours per week.* PREREQUISITE: PHYS 7200 or permission of instructor.

7220. **Relativistic Quantum Fields.** (3). General formalism of fields, the Klein-Gordon field, second quantization of the Dirac field, quantization of electromagnetic fields, interacting fields, scattering matrix perturbation theory, dispersion relations and

renormalization. PREREQUISITE: PHYS 7210 or permission of instructor.

7230. **Elementary Particles.** (3). Introduction to elementary particles, elementary particle dynamics, relativistic kinematics, symmetries, bound states, Feynman calculus, quantum electrodynamics, electrodynamics of quarks and hadrons, quantum chromodynamics, weak interactions and gauge theories. PREREQUISITE: PHYS 7200 or permission of instructor.

7300. **Electrodynamics.** (3). An advanced course in electricity and magnetism. Topics include fields and potentials, energy methods, steady currents and magnetic materials, Maxwell's equations and electromagnetic waves.

7375. **Methods of Mathematical Physics I.** (3). (Same as MATH 7375). Finite dimensional vector spaces, matrices, tensors, vector fields, function spaces, differential and integral operators, transform theory, partial differential equations. PREREQUISITE: Background in ordinary differential equations and linear algebra.

7376. **Methods of Mathematical Physics II.** (3). (Same as MATH 7376). Continuation of PHYS 7375. Complex variable theory, asymptotic expansions special functions, calculus of variations, additional topics on matrices and operators, topics in non-linear analysis. PREREQUISITE: PHYS 7375.

7520. **Statistical Mechanics.** (3). Elements of kinetic theory and applications to gases, specific heats, magnetism, etc. Partition functions, introduction to Boltzmann statistics and quantum statistics. *Three lecture hours per week*

7600. **Advanced Solid State Physics.** (3). Quantum mechanical treatment of electronic and vibrational states of metals, semiconductors and insulators, transport phenomena superconductivity, physics of defects in solids. PREREQUISITE: PHYS 7200 or permission of instructor.

7710. **Advanced Topics in Optical Spectroscopy.** (3). Advanced topics in atomic and molecular spectroscopy, including the interaction of optical radiation with matter, the transition probabilities, hyperfine structure, applications of group theory to spectroscopic problems.

†7995. **Seminar.** (1-3). Selected topics in physics research including areas of medical physics. Students required to give oral presentation based on library or original research. Credit not applicable to major.

†7996. **Thesis.** (1-6). Original investigation of an assigned problem in the area of graduate study to be carried out under the supervision of a qualified member of the staff. This investigation will furnish the material for a thesis. Scientific articles, progress reports, and special problems of interest are reviewed and discussed by the student in seminars each semester. A maximum of six semester hours credit is allowed toward a master's degree.

† Grades of S, U, or IP will be given.

POLITICAL SCIENCE

KENNETH M. HOLLAND, Ph.D., *Chair*
Room 427, Clement Hall
 T. DAVID MASON, Ph.D.,
Coordinator of Graduate Studies (M.A.)
 WINSOR SCHMIDT, LL.M.
Coordinator of Graduate Studies
 (M.P.A.)
 DAVID N. COX, Ph.D.
Coordinator of Graduate Studies
 (M.H.A.)

I. The Department of Political Science offers individually-tailored programs leading to the Master of Arts in Political Science, the Master of Public Administration, and the Master of Health Administration. The Master of Arts degree in Political Science provides a broad foundation in politics and government for those intending further graduate study

or careers in education and public service. Both thesis and non-thesis programs are available. Also the study of Political Science may be combined with study in related areas.

The Master of Public Administration degree programs educates men and women for careers in government and for employment with nonprofit and publicly-oriented organizations. The program combines interdisciplinary academic preparation with governmental and nonprofit internship experience.

The Master of Health Administration degree program is designed to provide an education for students preparing for careers in the broad range of health care agencies and services. The program combines interdisciplinary academic preparation with a field experience.

The Institute of Governmental Studies and Research provides unique research opportunities and field experience for students in both programs; academic credit can be obtained for internship programs with national, state and local governments, as well as for research and study abroad.

Assistantships are available for qualified students in both programs.

All graduate students will consult with their adviser in the Department of Political Science as to the program of study they expect to follow.

II. The Department of Political Science offers a graduate program leading to the Masters of Arts with a major in Political Science, a graduate program leading to the Master of Public Administration degree, and a graduate program leading to the Master of Health Administration degree. Special fields of study included in the Master of Arts in Political Science are: American Politics (National, State, and Urban) and Public Law; Political Thought; Political Behavior and Analysis; Comparative Politics; International Relations; Public Administration and Policy. For the Master of Public Administration program, the following concentrations are provided: General Public Administration; Urban Management and Planning; Health Services Administration, and Human Resource Administration.

III. M.A. Degree Program

A. Program Admission

Students for the Master of Arts program are selected from the pool of applicants who meet the Graduate School minimum standards for undergraduate grade point average and entrance examination scores. An applicant with an undergraduate grade point average of 2.8 on a four-point scale and a score of 950 (verbal plus quantitative) on the Graduate Record Exam (GRE) or 45 on the Miller Analogies Test (MAT) will be admitted to the Political Science program unconditionally. Applications from individuals not meeting these standards will be considered on a case-by-case basis. Admission to the program may be granted to such applicants under conditions established by the graduate coordinator of the department.

B. Program Requirements

1. Students who write a thesis must complete 33 hours of graduate courses including 3-6 hours of credit for POLS 7936, Thesis. Students who do not write a thesis must complete 36 hours of graduate courses.
2. Satisfactory completion of POLS 7100, Seminar in Scope and Methods of Political Science Research and 7401, Seminar in Political Theory.
3. At least 24 semester hours of the courses must be taken at the 7000 level, twelve of which must be in Political Science (27 hours non-thesis option).
4. Satisfactory performance on a Comprehensive Examination.
5. A minimum of two courses from three of the fields of Political Science listed above, unless a student chooses to take at least six hours in a collateral field in a related area.
6. At the discretion of the Graduate Coordinator, six to nine hours in graduate work outside political science may be applied to the Master of Arts in Political Science.
7. No more than 6 semester hours of internship courses may be counted toward the 33 or 36 semester hour requirement.

IV. Master of Public Administration (M.P.A.) Degree Program

A. Program Admission

Admission to the program will be based on selections from a pool of applicants who meet the University's Graduate School minimum undergraduate G.P.A. and aptitude examination scores.

Significant weight is given to the following factors in determining admissions to the M.P.A. program.

1. An undergraduate grade point average of 3.0 on a

four-point scale from an accredited college or university.

2. GRE aptitude (verbal plus quantitative) total scores of 1000, or GMAT aptitude scores of 500.

3. Letters of recommendation from three persons (one academic) familiar with the applicant's academic background or experience in public administration, specifying in detail the applicant's capabilities for graduate study and for future performance as a public administrator.

4. A statement of approximately 500-1000 words indicating the applicant's present interests and career goals, including why the applicant wants the M.P.A. degree.

B. Program Prerequisites

1. Those entering the program must satisfy the appropriate prerequisite requirements before entering the program or by the end of the first semester. The prerequisite requirements are:

- a. POLS 6101 (Political Statistics), or its equivalent; and
- b. POLS 3601 (Introduction to Public Administration), or its equivalent; or at least 6 semester hours of courses in American Government and public administration;

or demonstration of satisfactory performance on an admissions examination in introductory public administration administered by the M.P.A. Admissions Committee.

2. All students entering the program must receive a writing assessment from the Writing Center, and assistance with any difficulties that are identified.

3. All students entering the program who do not understand microprocessors and accessing the mainframe computer, or who do not have word processing, data base systems, or spreadsheet microcomputer skills, must acquire these skills through such means as short courses and training offered by Microcomputer Services.

C. Program Requirements

1. A total of at least 42 semester hours in graduate courses including the following core of required courses: A grade of B or better must be earned in each course:

- POLS 7600—Administrative Theory
- POLS 7601—Managing Public Human Resources
- POLS 7601—Methods of Problem Solving in Public Administration
- POLS 7602—Public Finance Administration
- POLS 7605—Public Personnel Administration
- POLS 7606—Administrative Law
- POLS 7609—Public Management
- POLS 7609—Administrative Ethics
- POLS 7213—Seminar in Public Policy
- POLS 7610—Internship in Public Administration

2. Each student will write an in-depth capstone paper while enrolled in POLS 7213, Seminar in Public Policy. A student must have completed a minimum of 30 hours in the program prior to enrolling in that course.

3. Completion of course work in one of the following concentration areas: General Public Administration; Urban Management and Planning; Health Services Administration; and Human Resources Administration. Depending upon the concentration area and the nature of undergraduate preparation, the student may take up to twelve semester hours in one or two related areas outside the Department of Political Science, with the approval of the academic coordinator.

4. A student must complete a minimum of 21 semester hours prior to enrollment in POLS 7610. Candidates for the M.P.A. degree who have had substantial administrative experience by the completion of all course work in the program may request a waiver of POLS 7610, Internship in Public Administration (3 hours). The request to waive must be submitted in writing to the academic coordinator and describe the student's administrative experience including responsibilities for supervision and budgets. If a waiver is granted, the student will substitute one 3-hour course for the internship. Students who have administrative experience may choose the option of an internship.

5. Thirty semester hours must be taken in 7000 level courses.

6. Satisfactory completion of a comprehensive examination.

V. Master of Health Administration (M.H.A.) Degree Program

A. Program Admission

Admission to the program will be based on selections from a pool of applicants who meet the University's Graduate School minimum undergraduate G.P.A. and aptitude examination scores.

Significant weight is given to the following factors in determining admissions to the M.H.A. program.

1. An undergraduate grade point average of at least 3.0 on a four-point scale from an accredited college or university.
2. GRE aptitude (verbal plus quantitative) total scores of at least 1000, or GMAT aptitude score of at least 500.

3. Letters of recommendation from at least three persons (one academic) familiar with the applicant's academic background or experience in health services, specifying in detail the applicant's capabilities for graduate study and for future performance as a health services administrator.

4. A statement of approximately 500-1000 words indicating the applicant's present interests and career goals, including why the applicant wants the M.H.A. degree.

B. Program Prerequisites

1. Those entering the program who have had no statistics, financial accounting, and economic theory must take the appropriate following courses to make up any deficiency.

- POLS 6101. Political Statistics (3).
- ACCT 7000. Financial Accounting (3).
- ECON 7010. Economic Theory (3).
- ECON 7100. Business Applications of Economic Theory (3).

2. All students entering the program must receive a writing assessment from The Writing Center (107 Patterson Hall, 678-4435), and assistance with any difficulties that are identified.

3. All students entering the program who do not understand DOS and accessing the mainframe, or who do not have word processing, dBASE, and LOTUS 1-2-3 microcomputer skills, must take the short courses on these subjects offered by Microcomputer Services (111 Life Sciences Building, 678-2199).

C. Program Requirements

1. Complete a total of at least 48 semester hours in graduate courses.

2. Complete the following core curriculum (42 hours). A grade of B or better must be earned in each course:

- ECON 6740 Health Care Economics
- ISDS 7050 Information Systems for Management Decisions

- FIR 7070 Financial Management
- POLS 7213 Seminar in Public Policy
- POLS 7605 Public Human Resources Administration
- HADM 7106 Health Services Research
- HADM 7101 Health Care Administration I
- HADM 7103 Health Care Administration II
- HADM 7107 Health Ethics
- HADM 7102 Law of Health Administration
- HADM 7105 Government Regulation of Health Services

- POLS 7633 Organization Processes and Leadership
- HADM 7104 Health Care Administration
- POLS 7610 Internship in Public Administration

3. Complete a minimum of 36 hours at the 7000 level.

4. Complete guided electives (6 hours) in consultation with the adviser.

5. Each student will write an in-depth capstone paper while enrolled in POLS 7213, Seminar in Public Policy. A student must have completed a minimum of 36 hours in the program prior to enrolling in that course.

6. A student must complete a minimum of 21 semester hours prior to enrollment in POLS 7610. Candidates for the M.H.A. degree who have had substantial administrative experience by the completion of all course work in the program may request a waiver of POLS 7610, Internship in Public Administration (3 hours). The request for this waiver must be submitted in writing to the academic coordinator and describe the student's administrative experience including responsibilities for supervision and budgets. If a waiver is granted, the student will substitute one 3-hour course for the internship. Students who have administrative experience may choose the option of the internship.

7. Satisfactory performance on a comprehensive examination.

E370 POLITICAL SCIENCE (POLS)

6101. Political Statistics. (3). An introduction to the analysis of quantitative data used to test hypotheses in the fields of political science and public administration, including both parametric and non-parametric techniques. Particular attention is given to alternative measures of association and significance, regression, factor analysis, path analysis, and causal modeling.

6211. Constitutional Law—National Powers. (3). An analysis of the relationships and controls of the three branches and the nature of the division of power between the nation and the states, with emphasis on the role of the Supreme Court as the arbiter in the constitutional system.

6212. Constitutional Law: Origins and Evolution of Civil Liberties In U.S. (3). Background, role and legitimate extent of civil rights and liberties in U.S.

6216. Interest Groups In American Politics. (3). Role and impact of interest groups within the American political system, including group theory, tactics, and relationships with various governmental institutions.

6217. The Legislative Process. (3). Origins, organization, functions, and activities of U.S. Congress and American state legislatures.

6221. Urban Administration. (3). Examination of politics, administration, and public policy in an urban context; focus on the administrative aspects of selected governmental policy-making processes; interrelationships of governments at various levels, urban challenges facing modern public administration.

6224. Urban Problems. (3). A study of selected problems in urban administration, politics, and policies.

†6230. Legislative Internship. (3-12). Supervised internship working with the Tennessee General Assembly or other legislative bodies on current legislative programs. Seminar sessions are held to discuss and analyze the problems with which the interns are working. May be repeated for a total of 12 credits. **PREREQUISITE:** Permission of department. (S/U).

6305. Soviet Government and Politics. (3). Organization and function of the authoritarian state, with emphasis on the role of the Communist Party and ideology.

6307. Government and Politics of Communist China. (3). A study of the institutions of government, the political process, political elites, political groups and political socialization of Communist China.

6401. Modern Political Ideologies. (3). A study of major ideologies of democracy, communism, and fascism as well as capitalism, socialism, racism, and nationalism, and ideologies of the developing or "third" and "fourth world" nations.

6405. Origin and Development of American Political Thought. (3). Origin and development of political thought in the United States from the colonial to the present time, with emphasis placed on the relation between political thought and political institutions and practices.

6501. Contemporary Problems in International Relations. (3). Studies or problems in the area of world politics. May be repeated for a maximum of 6 hours credit with permission of instructor.

6502. Soviet Foreign Policy. (3). Basic concepts about Soviet foreign policy; development and techniques; present patterns of Soviet relations with key nations; major problems in future relationships.

6504. International Law. (3). An analysis of the nature, scope, duties, rights, and evolutionary trends of international law.

6506. Problems in American Foreign Policy. (3). Studies or problems of American foreign policy. May be repeated for a maximum of 6 hours credit with permission of instructor.

6508. Theories and Concepts In International Relations. (3). Theoretical approaches to study of international politics. Consideration of various schools of thought, methods, and substantive literatures.

6510. International Political Economy. (3). Consideration of manner in which political processes affect and are affected by economic processes at global level.

6710-19. Special Topics In Political Science. (1-3). Topics of current significance in public issues.

7100-9100. Seminar In Scope and Methods of Political Science Research. (3). Survey of major theoretical approaches to study of politics with emphasis on both analytic and empirical aspects of political inquiry.

7201-8201. Seminar In American Politics. (3). Selected topics in American government and politics. May be repeated for a maximum of 6 credit hours.

7213-8213. Seminar In Public Policy Analysis. (3). Empirical and normative analysis of public policy at the local, state, national, and international levels. Emphasized are the theories, literature, and methodologies current in this field. **PREREQUISITE:** POLS 6101 or equivalent.

7224-8224. Seminar In Urban Problems. (3). Problems inherent in the growing urban developments in

the United States. The governmental organization of metropolitan areas and the difficulties of coordination of government functions. Proposed remedies and the reception of new approaches in selected metropolitan areas.

7225-8225. Seminar In Problems in State Government. (3). Selected policy making processes and policy problems arising from the operation of legislative, administrative, and judicial machinery. Special attention will be given to Tennessee.

7302-8302. Seminar In Comparative Politics. (3). Selected topics in comparative politics. May be repeated for a maximum of 6 credit hours.

7303-8303. Seminar In Political Development. (3). Comparative study of the process of political change in traditional developing nations.

7401-8401. Seminar In Political Theory. (3). Selected topics involving the development of political thought. May be repeated for a maximum of 6 hours credit.

7501-8501. Seminar In International Relations. (3). Selected topics in international politics and foreign policy. May be repeated for a maximum of 6 credit hours.

7502-8502. Seminar In National Security Policy. (3). The defense policy of the United States and selected foreign powers. The national security process, strategic theory and doctrine, and civil-military relations are treated.

†7503. Reading for Comprehensives. (3). Arranged on an individual basis for graduate students in political science, public administration, or health administration only. Credit not applicable to major. **PREREQUISITE:** Completion of degree requirements or in the last two semesters of program.

7600-8600. Seminar In Administrative Theory. (3). Significance of public administration in American government, includes an introduction to formal organization theory and bureaucracy, decision-making theory, leadership and motivational theory, and current trends and problems in the study of public administration.

7601-8601. Research Methods in Public Administration. (3). Issues and techniques in data collection for design and implementation of independent research projects; logic of conducting research in public administration, measurement, and sampling; introduction to program evaluation and specific quantitative decision-making techniques. **PREREQUISITE:** POLS 6101 or permission of the instructor.

7602-8602. Public Budgeting Finance. (3). (6602). Detailed study of administrative and political problems of fiscal policy, the budgetary process, and fiscal controls.

7603-8603. Public Sector Collective Bargaining. (3). Employee organizations and the development of collective relations in the public and hospital sectors. Special topics include unions and management wage policies, collective negotiation and bargaining, and the evaluation of the impact of unionization on public policy and union relations in the nonprofit sector.

7604-8604. Social Science In Law. (3). Applications of social science to such public policy questions as discrimination, obscenity, parole, trademarks, death penalty, child custody, and criminal offender profiles.

7605-8605. Public Human Resources Administration. (3). (6603). The study of policies, methods, and techniques utilized in public personnel administration. Special attention is given to problems reflecting contemporary demands upon personnel organizations. The capacity to analyze problems, select the most effective means of dealing with them and plan appropriate courses of action is developed through case example.

7606-8606. Seminar In Administrative Law. (3). (6611). Role and nature of administrative law, including procedural requirements and judicial review of administrative actions and liability of government for torts and breach of contract.

7608-8608. Public Management. (3). Analysis of responsibilities of managers of public organizations; review of structures, strategies, and skills for meeting those responsibilities including budget processes, leadership skills, decision-making, organizational

design, human resource strategies, and evaluation for program management.

7609-8609. Seminar In Administrative Ethics. (3). Introduction to ethical theories and principles as they apply to practice of public administration, basic legal constraints such as conflict of interest laws, and more subtle ethical dilemmas that arise in the exercise of discretion of public administrators.

†7610. Internship in Public Administration. (3-6). Participation in some type of field experience, including a written report critically describing the student's responsibilities. Field experience may result from a supervised internship in cooperating public or non-profit organizations or from appropriate administrative experience if the student is employed in a public or nonprofit organization. **PREREQUISITE:** Permission of the department.

7611. Practicum. (3-6). The application of knowledge, concepts and analytical tools to contemporary issues that challenge modern managers. Individuals select special projects to pursue in local public and nonprofit organizations and conduct research on these projects under the guidance of a faculty committee or work with the Institute of Governmental Studies and Research on current problems in public administration. May be repeated for a total of 6 credits. **PREREQUISITE:** Permission of the department.

7612-8612. Program and Policy Evaluation. (3). (6605). Models, theories, and techniques of program and policy evaluation in public administration; evaluation research design, data collection and analysis, dissemination of results and possible applications of evaluations to policy-making and administration; organizational and political contexts of evaluation.

†7613. Proseminar in Professional Development. (3). Introduction to public and health administration professions with emphasis on career development; employment opportunities, computer resources, professional associations, submission and publication of articles. Faculty and student presentations. Credit not applicable to major. Repeatable.

7628-8628. Mental Health Policy and Law. (3). Mental health systems, including voluntary and involuntary hospitalization, incompetency and guardianship, and mental health issues in criminal process; legal and policy concerns for mental health professions, including regulation, malpractice, informed consent, and records confidentiality.

7629-8629. Aging Policy and Law. (3). Social control and social justice considerations in such policy areas as protective services, Social Security, Medicare and Medicaid, long-term care, age discrimination, and death with dignity.

7633-8633. Public and Non-Profit Organization Processes and Leadership. (3). Theories, strategies, and systems of managing and planning human resources in non-profit and public agencies.

7634-8634. Developing Public Human Resources. (3). Organizational, group, and individual development processes and philosophy for public, non-profit, and health care agencies; special emphasis on application of knowledge and skills.

7635-8635. Issues In Public Human Resources. (3). Special issues of current interest that relate to management, planning, and development of human resources in non-profit and public agencies.

7702-8702. Independent Study. (3). May be repeated for a maximum of six hours. Independent investigation of research problems or directed readings in selected area of political science. **PREREQUISITE:** Permission of instructor.

7710-19-8710-19. Special Topics In Political Science. (3). Intensive study of selected topics in political science. May be repeated for a maximum of six hours.

†7996. Thesis. (3-6). The student must write and defend satisfactorily a thesis on a subject approved by the major professor.

E373 HEALTH ADMINISTRATION (HADM)

7101-8101. Health Care Administration I. (3). (POLS 7-8621) Analysis of health and medical care systems with reference to public, private and voluntary agen-

cies at local, state, regional, and national orient the administrator to health and medical care systems with which he may work.

7102-8102. Law of Health Administration. (3). (POLS 7-8625) Private health law, including professional liability, the relationship of physician and patient, reform of tort system for medical injuries, health care institutions, and access to health care.

7103-8103. Health Care Administration II. (3). (POLS 7-8622) Application of strategic planning and marketing concepts and techniques to health care sector; focus on strategy formation, strategic planning process, and marketing management; special emphasis given to distinctive characteristics of marketing in health care organization. **PREREQUISITE:** HADM 7102 or permission of coordinator of graduate studies (M.H.A.).

7104-8104. Health Care Administration III. (3). Overview of techniques for financial management in health care setting. Topics include revenue sources and mix; capital budgeting; cash, debt, property and internal services management; business plan development. **PREREQUISITE:** COREQUISITE: HADM 7101 and HADM 7103 or permission of coordinator of graduate studies (M.P.A.).

7105-8105. Government Regulation of Health Services. (3). (POLS 7-8624). Public law regulation, including health care quality, establishing personhood and individual autonomy, life and death decisions, antitrust, health care financing and cost control.

7106-8106. Health Services Research (3). (POLS 7-8106). Issues and techniques in data collection for design and implementation of a dependent research project; logistic data analysis; health services research, measurement, ethical considerations, logic of sampling, various methods of collecting data for health services research, and writing research proposal; introduction to program evaluation and specific quantitative decision-making techniques; overview of epidemiological concepts and techniques.

7107-8107. Health Ethics. (3). (POLS 7-8107). Introduction to ethical theories and principles; application to profession of health administration.

7110-8110. Health Care Politics and Policy. (3). (POLS 7-8626) Political, economic, and social forces affecting the contemporary health care system in United States. Some cross-national comparisons with other health care policy systems and issues that they face. **PREREQUISITE:** Permission of graduate coordinator.

7111-8111. Issues in Health Services Administration. (3). (POLS 7-8627) Seminar for discussion of issues affecting administrators of health services organizations. Includes issues such as right to die, responsibility for health, access for underserved populations, organ transplantation. **PREREQUISITE:** Permission of graduate coordinator.

† Grades of S, U, or IP will be given.

PSYCHOLOGY

ANDREW W. MEYERS, Ph.D., *Chair and Coordinator of Graduate Studies Room 202, Psychology Building*

I. The Department of Psychology offers Ph.D. programs in Clinical Psychology, Experimental Psychology, School Psychology, and Applied Psychology (terminal, non-thesis) program in School Psychology, and an M.S. (either thesis or non-thesis) program in General Psychology. Students admitted to one of the Ph.D. programs complete the requirements for the M.S. in General Psychology (with thesis) as part of their Ph.D. requirements. An Ed.S. degree with a major in Education and a concentration in School Psychology is also available (offered collaboratively with the College of Education). In addition, the M.S. in General Psychology program may be entered as a terminal program.

Admission to each of these programs is handled separately. Each has its own admission criteria, and application must be made for a particular program before an applicant is considered for that program. Any number admitted to one of these programs who

desires to transfer to another program within the department must make formal application to that program and will be evaluated competitively against the same criteria and on the same time schedule as all other applicants for that program.

The departmental objective is to educate both experimentally sophisticated professional psychologists and professionally appreciative research psychologists. The department professes a strong research emphasis, with a very diverse array of the theoretical models and frames of reference represented on the faculty.

For all of the following graduate programs, admission is not automatic by meeting minimal departmental admission requirements. Students are selected from a pool of qualified applicants to each program. Each year the number of students admitted to a program depends on availability of financial aid and adequate faculty supervision.

II. M.S./Ph.D. Degree Program

In these programs the M.S. is preparatory to continuation in the program. In order to be advanced to doctoral study, a student must have satisfactorily completed all required courses for the M.S. (with thesis) at The University of Memphis, or have completed an equivalent degree from another institution. Students possessing a master's degree without a thesis will be required to complete a thesis before being advanced to doctoral study.

The M.S./Ph.D. degree program offers training in three broad areas of specialization: Clinical Psychology (APA approved), School Psychology, and Experimental Psychology. Within the Clinical area, in-depth training is available in behavioral medicine, research design and statistics, child clinical, and clinical neuropsychology. Within the Experimental area, in-depth training is available in research design and statistics, applied experimental biopsychology, cognitive processes, developmental, learning, neuro and physiological psychology, sensory processes and perception, and social psychology. Special courses, as determined by department faculty, are required in these cases and students should familiarize themselves with required courses. Students interested in other areas should contact the department for further information.

A. Program Admission and Prerequisites

Applicants to the M.S./Ph.D. degree program are evaluated once each year only, for admission in the Fall semester; applicants for Spring admission are not considered. All application information must have been received by February 1 for a candidate to be considered for admission.

Required:

1. A grade point average of at least 2.5/4.0 in all undergraduate course work. Applicants with undergraduate records at this minimum level are not ordinarily admitted.

2. A minimum of 18 semester hours in undergraduate psychology courses, including courses in Quantitative Methods (Psychological Statistics), and Experimental Psychology; undergraduate coursework in Physiological Psychology, Psychology of Learning, and History of Psychology is strongly recommended.

Students lacking some or all of these prerequisite courses, but presenting an exceptional undergraduate record, may be granted graduate admission as regular, or as special, students; they will be expected to remove all undergraduate deficiencies during their first academic year.

GRE aptitude (verbal plus quantitative) total scores of at least 1100. Applicants with low test scores will be considered only if other supporting evidence (letters of reference, undergraduate grade point average) is outstanding.

4. Letters of recommendation from at least three persons familiar with the applicant's academic background and aptitude for graduate work in psychology, specifying in detail the applicant's capabilities for graduate study and for future performance as a psychologist.

5. A statement of 500-1000 words indicating the specific graduate program area being applied for, the applicant's present interests and career goals, research and applied interests, and prior research and applied experience. Prior undergraduate research interests and research involvement are weighted heavily.

6. A willingness to be interviewed by members of the department faculty, should that be required.

B. Program Requirements

1. *Credit Hours.* A minimum of 33 semester hours of graduate credit beyond the bachelor's degree is required for the M.S. degree in Psychology, and a minimum of 80 semester hours of graduate credit beyond the bachelor's degree is required for the Ph.D. degree in Psychology. However, most students in this department take between 90 and 100 credits in courses, seminars,

and applied and research practicum toward the Ph.D. degree. All work for a Ph.D. degree must be approved by, and must be completed at a level of performance satisfactory to, the graduate faculty of the department. No minor is required; students may take coursework for degree credit outside the department upon prior approval of the graduate faculty of the department.

Students with graduate credits earned at another institution, upon matriculation at The University of Memphis, may petition to have these credits applied toward the degree requirements at The University of Memphis. While such credits are not automatically transferred and must be approved by the area faculty, a maximum of 6 semester credit hours earned elsewhere may be applied toward the Master's degree requirements; for transfer students who have earned credits at other institutions where, a maximum of 50 semester credit hours may be applied toward the Ph.D. degree requirements.

Particularly where students are specializing in a professional area, the awarding of the doctorate does not merely attest to the accumulation of the specified number of hours in the classroom but also to the acquisition of sophisticated theoretical and research skills. The faculty has the responsibility to both the public and the profession of psychology to award this degree only when the student has achieved a satisfactory level of professional and research competencies as judged by the graduate faculty of the department. Further, students must exhibit high integrity and moral character consistent with the standards of ethical principles set forth by the American Psychological Association and Tennessee law.

2. *Enrollment.* With only rare exception, all M.S./Ph.D. degree candidates are expected to carry a minimum of three courses (9-10 credits) per semester, and to devote full time during their enrollment to pursuit of degree-related activities.

3. *Research.* All M.S./Ph.D. degree students are expected to be active in research collaboratively with members of the department faculty each semester they are enrolled.

4. *Master's Thesis (PSYC 7996) and M.S. Comprehensive Examination.* Each M.S. student is expected to complete an independent research project, culminating in a Master's thesis. Upon completion of the thesis, the student must defend the thesis orally. The student must show mastery of the thesis topic but also broader awareness of the theoretical and empirical issues in contemporary psychology. This oral examination serves as the M.S. comprehensive examination.

5. *Specialty Examination.* Each Ph.D. student will take a comprehensive written, oral and performance examination in the student's major area of specialization in psychology, typically during the third or fourth year of residence. Major Area Papers (PSYC 8620) may be used as an option to the written specialty examination.

6. *Comprehensive Educational Program.* In order that all M.S./Ph.D. candidates obtain comprehensive training in the diverse areas of psychology, they are required to complete PSYC 7000, 7301, 7302, 7303 during the first two years. In addition, all M.S./Ph.D. candidates must complete a third statistics/quantitative course approved by the department plus at least one course in each of the following four areas:

a. Biological Bases of Behavior: PSYC 7701-8701; 7702-8702, 7703-8703, 7704-8704, or 7506-8506 for School Psychology students.

b. Cognitive-affective Bases of Behavior: PSYC 7208-8208, 7210-8210, 7211-8211, 7801-8801, or 7207/8207 for School Psychology students.

c. Social Bases of Behavior: PSYC 8200-8200, 7206-8206, 7215-8215, 7217-8217, 7218/8218, or COUN 7531-8531 for School Psychology students.

d. Individual Behavior: PSYC 7202-8202, 7207-8207, 7412-8412, or for clinical students 7433-8433, or 7802-8802 for School Psychology students.

7. *Dissertation and Final Examination (PSYC 9000).* Upon completion of an independent dissertation research project acceptable to the faculty, each student will take a final oral examination oriented toward, but not exclusively on, the student's dissertation research and major area of specialization.

Students in the clinical psychology program are expected to meet these additional requirements:

8. *Required Courses and Activities for Clinical Students.*

Students in the clinical psychology program must complete the following courses: PSYC 7412-8412, 7428-8428, 7432, 7433, 7434, 7435, 7436-8436, and 8 credit hours of PSYC 7434-8434 (two courses of 4 hours credit each under two different clinical faculty members). As part of their clinical training, they must also participate in the activities of the Psychological Services Center. Students fulfill this requirement sitting in the psychotherapy supervision of advanced clinical students for at least one semester during the first year and by enrolling in 7438-8438, 1 credit in the fall

and 2 credits in the spring, during each of years two, three, and four in the clinical program. 7438/6438 credit is taken in addition to the regular clinical course load. As a result, clinical students will enroll in a minimum of 10 credits in the fall semester and 11 credits in the spring semester during years two, three, and four.

Funding during years two and three is fully integrated with scientist/practitioner training. Clinical students are required to take a one-year clinical practicum in an external agency and a one-year departmental research assistantship. The sequence of these two years will be determined on an individual basis. Funding during year four will be available at the students' option. The type of funding during year four may be in either of these areas depending upon (a) personal preference, (b) educational need, and (c) funding source availability.

(a) **Neuropsychology Subspecialty.** In addition to the general clinical requirements, clinical neuropsychology students must complete the following courses: PSYC 7701-8701, 7702-8702, 7703-8703, 7704-8704; nine credit hours of PSYC 7608-8608; nine credit hours of PSYC 7616-8616; and coursework in the areas of neuroanatomy and neurophysiology.

(b) **Child-Clinical Subspecialty.** In addition to the general clinical requirements, child-clinical students must complete the following courses: PSYC 7207-8207, 7219-8219, 7416-8416, and 7803/8803 (or equivalent course). Further, the requirement of two psychotherapy courses applicable to all clinical students that consist of family therapy (which may be satisfied by 7417-8417) and child behavior therapy (which may be satisfied by 7418-8418). Further, a major portion of practicum work must involve children, and the Master's thesis and doctoral dissertation must pertain to children.

9. **Clinical Internship.** For students in clinical psychology, a full-time one-year internship, in an agency approved by the director of training in clinical psychology, is required. A student cannot accept an internship unless the dissertation proposal has been approved in January of the year that the internship starts. Further, the dissertation data must be collected before the student can begin internship unless the internship agency gives written permission to the student to collect data while on internship.

10. Students in the School Psychology concentration complete a total of 102-108 graduate hours including: psychology 7800-8900, 7801-8901, 7804-8904, 7805-8905, 7806-8906, 7807-8907, 7808-8908, CIED 7541-8541, COUN 7582/8582, EDFD 7004, EDPS 7112-8112, and SPED 7000-8000.

Electives (18 hours); students may choose to take all electives in a subspecialty area to be determined with the adviser.

Practicum 7614-8614 (3-9 hours) and Internship 7812-8812 (12 hours).

III. M.A. and Ed.S. Degree Programs in School Psychology

This program is offered collaboratively with the College of Education, and coursework from both areas is required. Students entering the program must complete both the M.A. and the Ed.S. degrees, including an internship of one school year, in order to obtain an endorsement for certification. The Ed.S. degree is an advanced sequence in the specialty and is to be pursued only by persons who have completed the M.A. degree or comparable degree with a concentration in school psychology, or who already hold school psychology certification. The program is part of the College of Education unit, accredited by the National Council for Accreditation of Teacher Education (NCATE), and has met the folio review requirements of the National Association of School Psychologists (NASP)/NCATE Guidelines; also, it is formally approved as a competency-based program by the Tennessee State Department of Education, and leads to State certification in school psychology.

A. Program Admission and Prerequisites

1. An undergraduate overall grade point average of 3.00/4.00 (special consideration will be given to applicants with a GPA in the range of 2.5/2.99).

2. GRE Aptitude combined score of 900 (including at least 400 on either the Verbal or Quantitative Section) or a Miller Analogies Test Score of 45.

3. Letters of recommendation from at least three persons familiar with the applicant's academic background, and interest in working with school-age children in school settings; these letters should come from professional educators and/or psychologists.

4. Undergraduate preparation in Psychology and/or Education. It is strongly recommended that applicants have at least 18 undergraduate hours in Psychology and/or Education, with preparation in the psychology of learning, psychological appraisal/measurement, human growth and development, and foundations of education.

It is possible to be admitted to the M.A. or Ed.S.

programs in School Psychology on a full-time or a part-time basis. Those admitted are encouraged to complete the program as full-time students; part-time students must take a minimum of six credit hours per semester in this program.

B. Program Requirements—M.A. Degree (36 credits)

1. **Psychology courses** (21 hours): PSYC 7800, 7207 or 7801, 7802, 7803, 7804, 7805, 7806.

2. **Education courses** (15 hours): EDPR 7121 or 7149, EDRR 7511 or 7512, and 7541, EDFD 7004, SPED 7000 (or SPED elective or EDPS 7132 if characteristics of exceptional children course was taken at undergraduate level).

C. Oral examination.

4. **Participation in required service experiences** in the Psychological Services Center or other agency placements for training purposes may be an integral part of the required psychology coursework specified above in the School Psychology program.

C. Program Requirements—Ed.S. Degree (36 credits)

1. **Psychology courses** (6 hours): PSYC 7614, 7301 or a research elective.

2. **Education courses** (12 hours): EDPR 7112, RDNG 7540-44 (choose one), COUN 7541/7542, and one elective chosen in consultation with adviser.

3. **School Psychology Internship** (PSYC 7812, 12 hours) is a one school year requirement taken at or near the completion of other work.

4. Written examination.

IV. M.S. Degree Program in General Psychology

A. Program Admission and Prerequisites Required:

1. An undergraduate grade point average of 2.5/4.0 is required for admission without special permission.

2. GRE aptitude total (verbal plus quantitative) of 800, or a Miller Analogies Test Score of 30.

3. Letter of recommendation from at least three persons familiar with the applicant's academic background and aptitude for graduate work in Psychology.

4. It is strongly recommended that applicants have 12 undergraduate hours in psychology, including a course in statistics.

5. Applications to the M.S. in General Psychology program will be considered in the fall and spring semesters.

Admission to the M.S. in General Psychology program does not require a student to take any minimum number of credits per semester. The only constraint upon the pace at which the student pursues the degree is that credits more than six years old may not be counted toward the degree.

B. Program Requirements

1. All students in the M.S. in General Psychology program must be in good academic standing at the end of 15 credit hours of graduate work in order to continue in the program.

(a) PSYC 7301 or equivalent

(b) PSYC 7302 or equivalent

(c) At least one of PSYC 7203, 7206, 7207, 7210, 7211, 7212, 7215, 7217, 7701

(d) Six additional credit hours of graduate work in Psychology exclusive of field practice, research practice, clinical practice, seminars and special topics courses (unless specifically designated otherwise) and core clinical courses 7431, 741, 743, 7433, 7434.

2. On completion of the first 15 hours, it is expected that the student will, in consultation with the coordinator or major professor, have decided on goals and objectives for the remainder of the course of study. Courses which fit these goals and objectives may be in Psychology or other departments in the university. Students who are not in good academic standing at this time must institute an appeal with supporting letters to the Coordinator and M.S. in General Psychology Committee for consideration of continuance in the program. Such cases will be considered on an individual basis.

3. A total approved program of 33 credit hours if the student elects to do a thesis, or 36 credit hours without a thesis.

4. A specialty examination covering the student's area(s) of focus will be taken during the last semester in the program.

E390 PSYCHOLOGY (PSYC)

7000-8000. Issues in General Psychology (3). Required of all doctoral degree candidates. A seminar discussion of the basic issues in contemporary psychology within their historical context, with extensive examination of their implications for theoretical and professional applications.

7010-19-8010-19. Special Topics in Psychology. (1-3). Topics are varied and announced in *Schedule of Classes*.

7108-8108. Psychology and Law. (3). Interface between law and psychology, covering such topics as malpractice, competency or insanity hearings, divorce and child custody, commitment procedures, right to treatment, and confidentiality. Of particular interest to students planning to practice as professionals. **PREREQUISITE:** Admission to graduate training program in Clinical Psychology or permission of instructor.

7200-8200. Social and Community Intervention. (3). Substantive issues and topics in community psychology, applied social psychology, public policy, and program evaluation. Of particular interest to students interested in applying psychology to social problem solving.

7203-8203. Behavior Analysis. (3). A comprehensive treatment of behavioral principles in their application to simple and complex forms of behavior. The course focuses on operant conditioning of animal behavior and demonstrates the basic behavioral principles at work in their simplest form. These operant conditioning principles are extended to human behavior occurring in the natural environment. Increasingly complex human behaviors are successively introduced.

7206-8206. Group Processes. (3). Social psychology of groups and organizations including social influence, leadership, and inter- or intra-group behavior.

7207-8207. Developmental Psychology. (3). An analysis of the course of development from conception to young adolescence in the "normal" individual. Emphasis on developmental methodologies and theories in the areas of physical and motor development, and cognitive and intellectual functioning.

7208-8208. Psychology of Perception. (3). An examination of the historical development, research, and major theoretical positions in the area of perceptual psychology. Major emphasis is placed on theoretical and experimental treatment of the basic perceptual phenomena.

7210-8210. Psychology of Learning. (3) Examination and discussion of current research, and of theoretical and experimental problems in the area of learning and behavior modification. Topics covered include reinforcement, extinction, motivation, generalization, discrimination, retention, and forgetting.

7211-8211. Cognitive Processes. (3). Analyses of thinking, conceptualization, language and symbolic activity, and related mediational processes in the individual.

7212-8212. Industrial Psychology. (3). The application of psychological principles and findings to industrial settings analyzing personnel selection, classification and evaluation, employee attitudes, morale and motivation, and psychological factors in work.

7215-8215. Organizational Psychology. (3). The course deals with the major organizational determinants of individual and group behavior and performance. The characteristics of organization structure and climate are explored from both a classical and a contemporary viewpoint. Organization change and development theories are examined plus the major ancillary theoretical positions on leadership, individual and group performance, behavior modification, selection and training.

7216-8216. Behavior Management. (3). Application of the principles of operant-instrumental learning to human behavior in various settings such as educational, rehabilitative and institutional programs. Practical implementation of the principles of behavior analysis and management will be stressed and expected of the student. **PREREQUISITE:** PSYC 7203 or equivalent.

7217-8217. Social Psychology I. (3). An examination of the social psychological literature pertaining to the philosophy of human nature issues of the extent to which human behavior is (a) distinct from the behavior of other animals and (b) guided by understanding. Coverage includes such topics as language, aggression, interpersonal attraction, attribution, and self-perception.

7219-8219. Social and Personality Development. (3). A general survey of social and personality development from infancy through adolescence. The course

consists of three sections: (1) general theoretical perspectives, including intrapsychic, cognitive, and social learning approaches; (2) intra-individual phenomena such as sex role, traits, moral development, etc.; (3) interindividual phenomena such as family interactions, peer interactions, and societal influences.

7222-8222. Psychology of Human Memory. (3). Major theoretical and empirical issues in the study of human memory; major emphasis on nature of structures and processes involved in memory encoding and retrieval and nature of representations available to memory.

7301-8301. Research Design and Methodology. (3). The emphasis will be on mathematical and nonmathematical analyses of psychological data, theoretical and experimental implications of different analyses, various data collection techniques, and types of experimental and statistical control.

7302-8302. Advanced Statistics in Psychology I. (3). Introduction to general linear model; multiple regression analysis, single- and multiple-factor analysis of variance, and discriminant analysis; emphasis on using computer software programs to perform statistical analyses. PREREQUISITE: PSYC 2301 or equivalent.

7303-8303. Advanced Statistics in Psychology II. (3). Intermediate and advanced topics related to analysis of variance, including fixed and random effects, repeated measures, non-orthogonal designs and the analysis of covariance; traditional analysis of variance concerns within framework of general linear model, scales of measurement, planned and post hoc comparisons, power analysis and concept of effect size. PREREQUISITE: PSYC 7302 or equivalent.

7304-8304. Measurement Theory and Psychometrics. (3). Measurement theory involved in the construction and evaluation of psychological measuring instruments will be stressed. Particular emphasis will be placed on scaling methods and their use in psychological research and evaluation.

7305-8305. Quantitative Methods for Reviewing Research. (3). Quantitative procedures (meta-analysis) for reviewing research findings in psychology and other social sciences; techniques for locating and coding research studies, calculating effect sizes, and analyzing study findings. PREREQUISITE: Permission of instructor.

7306-8306. Linear Structural Modeling. (3). Path models, path analysis, cross-lagged panel studies, confirmatory factor analysis, and complete latent variable causal models, including applications of latter to experimental and non-experimental data.

7307-8307. Models of Program Evaluation. (3). History and nature of program evaluation, review of different approaches taken to evaluation by variety of major theorists in the field, practice in evaluation.

7412-8412. Psychopathology. (3). A survey of the manifestations of abnormal behavior and psychological processes. Detailed analysis of the clinical and experimental literature concerning psychological and psychiatric disorders and their etiology. PREREQUISITE: Admission to the graduate training program in clinical psychology or permission of instructor.

7414-8414. Clinical Hypnosis. (3). Current major theoretical views of nature of hypnosis, its clinical applications in areas (e.g., psychotherapy, pain control, symptom control). Elementary skills in using hypnosis. PREREQUISITE: Admission to graduate training program in clinical psychology or counseling psychology or permission of instructor.

7416-8416. Child Psychopathology. (3). A survey of the major theoretical formulations, childhood disorders, including learning, developmental, psychoanalytic and family systems theories. Organic, familial, and sociocultural influences are discussed. Emphasis is placed on basic research that contributes to our understanding of these difficulties. Traditional approaches to intervention are reviewed along with family treatment. PREREQUISITES: Admission to graduate training program in clinical psychology or consent of instructor.

7417-8417. Family Therapy. (3 or 4). The theoretical works of several important family therapists and

researchers (e.g., Haley, Jackson, Satir) are discussed. Methodological issues and relevant research findings are reviewed. Special emphasis is placed on family interventions with certain childhood problems. A substantial practicum may be added to the course that requires the student to provide therapy to at least one family unit. PREREQUISITES: Admission to the graduate training program in clinical psychology or permission of instructor.

7418-8418. Behavior Therapy with Children. (3 or 4). Applications of learning models to effect behavioral change in children reviewed from theoretical, experimental, and clinical perspectives. Emphasis on intervening in natural environment and using parents, teachers, and peers in treating problems such as low academic achievement, inadequate social skills, hyperactivity, and child abuse. A substantial practicum component may be added to the course that requires the student to provide therapy to at least one child. PREREQUISITES: Admission to graduate training program in clinical psychology or consent of instructor.

7420-8420. Personal Construct Theory. (3). In-depth seminar on personal construct theory, a cognitively oriented theory of personality stemming from work of George Kelly. Philosophical assumptions and basic theory, use of repertory grid technique and its application to research on such topics as cognitive complexity, development, interpersonal relationships, psychopathology, and psychotherapy.

7428-8428. Foundations of Clinical Psychology. (3). Introduction to fundamental concepts and methods of clinical psychology conceived as application of scientific reasoning to human problems; historical and scientific foundations for scientist-practitioner model, and various roles of clinical psychologist in social context; ethical, legal, and multi-cultural issues emphasized. PREREQUISITE: Admission to graduate training program in clinical psychology.

7430-8430. Clinical Assessment: Abilities and Achievement. (3). Introduction to psychological assessment of cognitive abilities and achievement; exposure to basic psychometric concepts; observation and interpretation of assessment related to behavior; specific emphasis on development of assessment skills such as test administration, test interpretation, and report writing. PREREQUISITE: Admission to graduate training program in clinical psychology.

7432-8432. Clinical Assessment: Case Conceptualization. (4). Comprehensive review of fundamental concepts and practices of clinical assessment conceived as the application of scientific reasoning to problem of case conceptualization; development of conceptualization skills with integrating of interview, objective assessment, and systematic observations; evaluation of different assessment approaches for empirical support and utility in case management; critical and analytic thinking emphasized. PREREQUISITE: Admission to graduate training program in clinical psychology.

7433-8433. Clinical Assessment: Psychodiagnostics. (3). Introduction to battery of tests most typically used in professional settings, including MMPI, Rorschach (Exner), TAT and Sentence Completion instruments. Use of computers as adjunct to test interpretation. This course will be followed in the ensuing semester by a required practicum (1 hour) to provide supervised experience. PREREQUISITE: Admission to graduate training program in clinical psychology.

7434-8434. Clinical Psychotherapies. (4). In-depth study with practicum of methods of psychotherapy and intervention strategies, their basic assumptions, spheres of applicability, and typical outcomes. Therapeutic approach covered will depend upon the particular instructor. May be repeated for a maximum of 20 credits with a change in topic. PREREQUISITE: Admission to graduate training program in Clinical Psychology.

7437-8437. Clinical Special Topics. (1-3). Provides advanced conceptual discussion and supervised skill training in a variety of techniques not routinely covered in detail previously, thus amplifying in depth such clinical procedures as neuropsychological group therapy, implosive techniques, aversion methods,

systematic desensitization, the design and execution of broad spectrum composite change programs, "in-patient management," and therapeutic community approaches. (Only nine hours may be counted toward degree requirements.) PREREQUISITE: Admission to the graduate training program in Clinical Psychology.

†7438-8438. Practicum in Clinical Treatment Approaches. (1-3). Practical experience to students in clinical psychology, permitting them to work under professional supervision for 35 therapy sessions in the Psychological Services Center. Students conduct intake interviews, administer and interpret psychological tests, and provide therapy. May be repeated for a maximum of 16 hours credit. PREREQUISITE: Admission to the graduate training program in clinical psychology.

The following seminars are systematic studies of current topics in the fields listed in the course titles. Only nine hours may be counted toward degree requirements.

7501-8501. Seminar: General Psychology. (3).

7502-8502. Seminar: Physiological Psychology.

7503-8503. Seminar: Experimental Psychology. (3)

7504-8504. Seminar: Comparative Psychology. (3).

7505-8505. Seminar: Quantitative Psychology. (3).

7506-8506. Seminar: Clinical Psychology. (3).

7507-8507. Seminar: Industrial Psychology. (3).

7508-8508. Seminar: Research Design and Statistics. (3).

7509-8509. Seminar: School Psychology. (3).

7510-8510. Seminar: Organizational Psychology. (3)

7512-8512. Seminar: Developmental Psychology. (3)

7514-8514. Seminar: Cognitive Science. (3).

7515-8515. Seminar: Social Psychology. (3).

7516-8516. Issues in Psychotherapy Research. (3). Research evidence pertaining to basic questions about psychotherapy and its effectiveness; classic contributions and current research findings.

The following research practicum courses are individualized advanced laboratory or field research activities in the areas listed in the titles. Only nine hours may be counted toward degree requirements.

†7601-8601. Research Practicum: General Psychology. (1-3).

†7602-8602. Research Practicum: Physiological Psychology. (1-3).

†7603-8603. Research Practicum: Experimental Psychology. (1-3).

†7604-8604. Research Practicum: Comparative Psychology. (1-3).

†7605-8605. Research Practicum: Social Psychology. (1-3).

†7606-8606. Research Practicum: Clinical Psychology. (1-3).

†7607-8607. Research Practicum: Developmental Psychology. (1-3).

†7608-8608. Research Practicum: Neuropsychology. (1-3).

7609-8609. Research Practicum: School Psychology. (1-3).

†7610-8610. Field Practicum: Clinical Psychology. (1-3). May be repeated for a total of 12 credits. Supervised experience in the use of psychological diagnostic, treatment, or community intervention procedures in various community agencies and facilities. PREREQUISITE: Admission to the graduate training program in Clinical Psychology, or consent of instructor.

†7611-8611. Field Practicum: Social Industrial Psychology. (1-3). (May be repeated for a maximum of 9 credits). Seminar discussion and supervised experience in the application of basic psychological procedures and principles to social, personnel, and organizational activities in various industrial, military and community settings. PREREQUISITE: Admission to graduate training program in industrial-organizational psychology, or permission of the instructor.

†7614-8614. Practicum: School Psychology. (1-9). (May be repeated for a maximum of 12 credits). Supervised experience in the use of psychological

procedures in educational settings. Only nine hours credit may be applied to the degree. **PREREQUISITE:** Admission to graduate training program in school psychology and permission of instructor.

7615-8615. Special Problems. (1-3). (May be repeated for a total of 12 credits.) Independent investigation of a research problem, or directed readings, in a selected area of psychology chosen in consultation with the instructor. Only six hours credit may be applied to the degree. **PREREQUISITE:** Permission of instructor.

†7616-8616. Clinical Practicum: Neuropsychology. (3). (May be repeated for a maximum of 9 credits.) The advanced student interested in neuropsychology will receive supervised experience in the use of psychodiagnostic techniques in various community settings. This training will cover the basic diagnostic techniques, specialized diagnostic techniques, and neurological assessment procedures. **PREREQUISITE:** Permission of instructor.

†7617-8617. Seminar in Research Methodology. (3). Research seminar for students planning thesis/dissertation work, developing other research projects, or interested in learning more about research design issues. Offers structured forum to present research ideas, receive advice on issues of design and analysis, and critique research designs of others.

7701-8701. Neuropsychology I. (3). A comprehensive study of the relationships between brain function and behavior. The anatomy and physiology of the nervous system will be reviewed. Major emphasis is on various functional systems of the human brain such as language, learning, attention, activation, and memory.

7702-8702. Neuropsychology II. (3). Historical circumstances affecting the development of neuropsychology, investigation of the various techniques available for assessing central nervous system function, brain-behavior relationships, and normative and actuarial data. Emphasis on strategies for assessing cerebral dysfunction and patterns of symptoms. **PREREQUISITE:** PSYC 7701.

7703-8703. Neuropsychology III. (3). Selective review of theoretical, research and applied issues in child neuropsychology, human brain development, hemispheric specialization, plasticity and effects of early trauma; childhood disorders associated with definite or suspected neurological impairment or dysfunction; introduction to child neuropsychological assessment as well as remediation and treatment of brain-related disorders in children. **PREREQUISITE:** PSYC 7701 or permission of instructor.

7704-8704. Neuropsychology IV. (3). Examination and discussion of current research in learning as it relates to nervous system function and damage to the anatomical substrates of such function. Emphasis on behavioral plasticity and recovery of function following destructive lesions. Other topics include memory, reinforcement, motivation and sensory substitution. **PREREQUISITE:** PSYC 7701.

7706-8706. Cognition and Aging. (3). Age-related changes in cognition in conjunction with aging of the central nervous system (CNS). Topics include: cellular and genetic mechanisms of aging; aging and sensory information processing; differential aging of memory, spatial abilities and language; aging of higher cognitive functions. **PREREQUISITES:** Graduate standing and consent of instructor; course in biological bases of behavior strongly recommended.

7800-8800. Introduction to School Psychology. (3). Survey of school psychology including historical perspectives on events, roles and functions, and professional issues. State and national trends in certification, licensure, training and employment.

7801-8801. Human Learning and Development: Principles. (3). A survey of the psychological theories of human socialization with special emphasis on the empirical foundations of human learning and development. Special focus is on such processes as learning and transfer of training, cognitive and intellectual development and functioning, language acquisition and use, and information processing.

7802-8802. Psychological Problems of the Child. (3). Recognition and treatment of various childhood conditions including behavior disorders within the

context of school psychology practice in public and other educational settings. Emphasis on problems encountered by exceptional children and their families, relevant research information and professional issues. **PREREQUISITE:** Course on characteristics of exceptional children or permission of instructor.

7803-8803. Psychoeducational Assessment I. (3). Critical analysis of intellectual assessment including skill development in administration, scoring, and interpretation of major individual tests of intelligence. Related psychoeducational instruments with emphasis on case study data collection and report writing. **PREREQUISITE:** Admission to graduate studies in psychology or permission of the instructor.

7804-8804. Psychoeducational Assessment II. (3). Critical analysis of personality assessment including skill development in administration, scoring, and interpretation of major personality assessment techniques. Related psychoeducational instruments with emphasis on case study data collection and report writing. **PREREQUISITE:** PSYC 7803 and permission of instructor.

7805-8805. Psychological Intervention I. (3). Introduction to practice of consultation techniques in school psychological services, overview of theory, research and issues with opportunities for practical experiences.

7806-8806. Psychological Intervention II. (3). Survey of direct intervention strategies employed in delivery of school psychological services including behavioral, cognitive-behavioral, group, family, crisis intervention, sex abuse and play therapy interventions; overview of theory, research, and issues with opportunities for practical experience.

7807-8807. Psychological Interventions III. (3). School psychological consultation techniques and applications; field experiences. **PREREQUISITE:** PSYC 7805.

7808-8808. Psychoeducational Assessment III. (3). Introduction to psychoeducational assessment of preschool children; includes issues surrounding early assessment, skill development with preschool instruments, and related report writing, conferencing. **PREREQUISITE:** Permission of instructor.

†7812-8812. Internship: School Psychology. (3-6). A field placement in a community educational agency during which the student practices acquired psychological procedures and skills on a full- or part-time basis under intensive professional supervision. Includes a minimum of 1200 clock hours, at least 600 of which are in a school setting according to NASP guidelines. May be repeated to a maximum of 12 semester hours applied toward completion of the certification program in school psychology. **PREREQUISITE:** Admission to the graduate training program in School Psychology and permission of the program coordinator.

†7996. Thesis. (1-3 or 12). Independent research for Master's degree. Application for writing a thesis must be filled out on an approved form after consultation with major professor and filed with the Dean of Graduate Studies. One hour class restricted to final semester thesis work.

†8620. Major Area Paper. (3). Independent investigation of an approved topic of the student's specialization, leading to the preparation of a publishable paper following the format of the *Psychological Bulletin* or the *Psychological Review*. Only six hours may be counted toward degree requirements.

†9000. Dissertation. (1, 3, 6, 9, or 12). Independent research for Doctor of Philosophy degree. Application for writing a dissertation must be filled out on an approved form that consultation with the major professor and filed with the Dean of Graduate Studies.

VR33 INTERDISCIPLINARY STUDIES (INTD)

The following courses, INTD 6510 and 6511, comprise an eight month training program in law enforcement which prepares students for seasonal employment as rangers in the National Park Service and the Arkansas and Tennessee State Park Services. The program is coordinated by the Department of Psychology and the area of Parks and Recreation in the Department of Health,

Physical Education and Recreation.

6510. Behavior Management in Recreation Areas I. (4). Concepts of industrial training and social psychology applied to teaching content and skills required for people-management positions as rangers in federal and state parks. Classroom instruction, readings and applied practical exercises included. **PREREQUISITE:** permission of instructor.

6511. Behavior Management in Recreation Areas II. (4). Advanced consideration of content and skills involved in managing people who visit recreation areas, including: abnormal behavior and human relations, basic accident investigation, alcohol and drug abuse, and courtroom testimony and procedures. **PREREQUISITE:** INTD 6510 and permission of instructor.

† Grades of S, U, or IP will be given.

SOCIOLOGY AND SOCIAL WORK

REBECCA F. GUY, Ph.D., *Chair*

Room 231 Clement Hall

JAMES D. PRESTON, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Sociology and Social Work offers the Master of Arts degree with a major in Sociology.

II. M.A. Degree Program

Graduate students who select Sociology as a major area will consult with the Coordinator of Graduate Studies in the department as to their program of study.

A. Program Admission

Applicants for admission to the program must meet the admission standards of The Graduate School and have at least twelve hours of undergraduate work in sociology or equivalent experiences.

B. Program Requirements

1. Students may choose one of two degree programs: (A) the thesis program requires thirty (30) semester hours of graduate level work which includes 3-6 hours of Sociology 7996 (Thesis); (B) the non-thesis program requires thirty-three (33) semester hours of graduate level work and the passing of both written and oral comprehensive examinations. The following courses are required of all majors: SOCI 6312, 7210, and 7320 and one additional advanced course in methodology or statistics.

2. For option (A), at least 24 semester hours of the student's course work must be in the Department of Sociology and Social Work. For option (B), at least 27 semester hours must be in the Department of Sociology and Social Work.

3. It is the responsibility of each student to obtain a copy of the *Journal of Arts Degree Program in Sociology Handbook* from the graduate coordinator or the department office. This document will answer most questions concerning the program.

E410 SOCIOLOGY (SOCI)

6211. Contemporary Sociological Theories. (3). Major frameworks of 20th century sociological thought, including theoretical schools of functionalism, exchange theory, critical theory, symbolic interactionism, phenomenological sociology, and ethnomethodology; current social and political trends and issues.

6312. Intermediate Social Statistics. (3). Multivariate analysis of social data. Use of computer programs for data management and statistical analysis. **PREREQUISITES:** SOCI 3311 and 3322, or their equivalent, or permission of the instructor.

6541. Sociology of Aging. (3). Ageism in sociocultural context; current beliefs, values, and norms regarding aging; structural location of aging in society, and implications of ageism in housing, crime, physical illness and mental illness.

6842. Sociology of Occupations and Professions. (3). Sociological analysis of the division of labor, occupational groupings, career patterns, and professional associations in modern American society.

6900-09. Special Topics In Sociology. (3). Topics are varied and announced in *Schedule of Classes*.

7120. Seminar In General Sociology. (3). General overview of the discipline. Sociological perspective, key sociological concepts and introduction to methods and theories employed in the field. (Recommended for students with limited undergraduate background in Sociology).

7122. Proseminar in Professional Development. (3). Introduction to sociological profession emphasizing career development; employment opportunities, computer resources, professional associations, submission and publication of articles. Faculty and student presentations. **PREREQUISITE:** Permission of graduate coordinator.

7210-8210. Theory Seminar. (3). An advanced analysis of recent developments in sociological theory, including the relationship of theory to empirical research.

7212-8212. Multi-Racial Feminist Theory. (3). Intensive analysis of major figures and issues in contemporary multi-racial feminist theory, emphasis on theory that grapples with conceptual and methodological requirements for multi-racial feminist politics of diversity which draws on both United States and international scholarship.

7320-8320. Seminar In Methods of Social Research. (3). Issues and techniques in data collection for the design and implementation of independent research projects; logic of conducting social scientific research ethical considerations, logic of sampling, various methods of collecting data for social research (e.g. experimental design, participant observation, survey research/questionnaire construction, and content analysis) and writing research proposal.

7322-8322. Seminar In Quantitative Data Analysis. (3). Preparation, analysis and interpretation of existing quantitative data; data processing, multivariate analysis, interpretation and writing results for research projects. **PREREQUISITE:** SOCI 6312, equivalent, or permission of instructor.

7325-8325. Seminar in Qualitative Research Methods. (3). Examination of qualitative social science research methods, particularly rationale behind these methods, how and when they are employed, and processes of analyzing field observations, oral histories and in-depth interviews.

7330-8330. Seminar in Current Research Literature. (3). A seminar dealing with current topics of interest in the field. Topics will vary in response to the interests of the students and specialties of the staff. (May be taken twice for three hours credit each time when topic varies.)

7410-8410. Sociology of Women. (3). Social definitions of gender and impact of these definitions on women's lives; women's responses to these conditions.

7411-8411. Social Stratification. (3). Theoretical analysis of how social class status and power shape social relations, determine life chances, and affect attitudes, opinions, and political choices of individuals and groups; processes that perpetuate systems of class, gender and race inequality, and degree of social mobility in societies.

7421-8421. Racial and Social Inequality. (3). (7810). Comparative study of racial, ethnic, and social minorities in the United States; historical and contemporary experiences of groups such as African Americans, Latinos, Asian Americans, Native Americans, homosexuals, and political minorities, as well as current theories in American sociology used to interpret their experiences; how gender and class influence experience of oppression.

7442-8442. Sociology of Poverty. (3). Patterns of wealth and income inequality in contemporary society. Consequences of poverty for society and individuals in various institutional contexts. Critical evaluation of traditional theories of poverty and contemporary alternatives.

7450-8450. Seminar in Aging. Aging as sociological phenomenon through understanding and applying principles of gerontological analysis to contemporary topics in aging, including acquaintance with and use of computer accessible literature data base.

7511-8511. Theories of Deviance. (3). A seminar in the sociological approaches to the study of deviance and social disorganization with an emphasis on current sociological theory and research.

7512-8512. Sociological Analysis of Deviant Behaviors. (3). Examination of various categories of deviant behavior analyzed from the sociological perspective. Topics include pornography, prostitution, male homosexuality, lesbianism, other forms of sexual deviance, compulsive gambling, drug use, alcoholism and other relevant topics of current importance.

7528-8528. School, Family, and Delinquent Children. (3). Delinquency in context of children's relationships with family and school; theory of social bonding; changing social roles of children (through the life cycle and historically); family and delinquency; schools, truancy, and delinquency; endangered children; female delinquency; and treatment/prevention/control of delinquency.

7631-8631. Urban Theory Seminar. (3). Competing theories and accompanying research findings on current issues in macro and micro urban theory; rise and fall of cities; effects of urbanism and urban form on individual and group behavior; how urban social groups (e.g., social classes, race/ethnic groups) manage their lives and their relations with others, and how these groups mobilize in efforts to change or resist change.

7655-8655. Sociological Foundations of Community Studies. (3). Ecological, interaction, and social system perspectives for community analysis; contemporary applications of theories within context of American society; implications of current changes for community life and social stratification, leadership and power structure, social differentiation and integration, community development, and ideology.

7711-8711. Seminar in Comparative Sociology. (3). How and why countries experience different social change trajectories; theories and research on social, cultural, political, and economic differences among countries and regions of the world; importance of global/ international processes in shaping these differences; class and state formation, revolution, emergence of democracy, effects of countries' roles in the world-system.

7721-8721. Seminar in Collective Behavior. (3). (6720). Emergence of collective behavior, spontaneous collectivities, social movements, social consequences of restrictive collective behavior.

7751-8751. Social Structure and Personality. (3). Advanced course in social psychology, incorporating basics and emphasizing sociological approaches; symbolic interaction, non-laboratory methods, attitude measurement, socialization, self-concept, gender, attraction, personal relationships, small groups, power, and situationalism.

7811-8811. Formal Organizations. (3). (7460). Competing theories of formal organizations and accompanying research findings on current issues of bureaucratization and centralization of modern so-

cial systems; close examination of power and functions of various large scale organizations, including economic, political, and educational institutions.

7820-8820. Seminar in Sociology of Education. (3). Schools and school life from sociological perspective; how societal objectives are translated into school policies and practices.

7830-8830. Seminar in the Family. (3). (7420). An advanced course in the study of the family which is primarily concerned with research findings in the area of family disorganization, changes in family structure and function, parent-child interaction, working mothers, and problems of aging.

7832-8832. Work and Family. (3). Current research on work and family and broader sociological relationship between social structure and personal life; link between home and market work, impact of employment, underemployment, and poverty on family life, and contemporary policy implications.

7851-8851. Medical Sociology. (3). Social meaning of *disease*, with special emphasis on the cultural, organizational, and behavioral contexts of the occurrence and management of *disease*.

7852-8852. Sociology of Mental Illness. (3). Social meaning of *mental illness*, with special emphasis on the cultural, organizational, and behavioral contexts of the occurrence and management of *mental illness*.

7853-8853. Women and Health. (3). Focus on American health care system and social/political economic factors affecting health of women of different racial/ethnic and economic groups.

7860-8860. Seminar in the Sociology of Religion. (3). A sociological examination of religious institutions cultural and social factors associated with religious structure, religious values, religious behavior; secularization of culture and change of social structure; analysis of religious organizations, the religious leadership and religious movements.

7912-8912. Directed Individual Study. (1-4). Individually directed advanced reading and/or research in special areas of interest. **NOTE:** Course may be repeated for a maximum of 6 hours credit. **PREREQUISITE:** Permission of Coordinator of Graduate Studies.

†7913. Teaching Skills for Graduate Assistants. (1-3). Overview and practical demonstrations of art of teaching sociology. Credit not applicable to major. May be repeated. **PREREQUISITE:** Limited to sociology majors; permission of graduate coordinator.

†7914. Workshop in Professional Development for Graduate Assistants. (1-3). Presentations of research methods and scholarly output by faculty, graduate students and visiting scholars. Credit not applicable to a major. May be repeated. **PREREQUISITE:** Limited to sociology majors; permission of graduate coordinator.

7915. Skills for Research and Proposal Preparation. (1-3). Research design, practice, and methodology in professional writing in sociology; specific emphasis on thesis/dissertation proposal preparation. May be repeated. **PREREQUISITE:** Limited to sociology majors; permission of graduate coordinator.

†7996. Thesis. (1-6). Supervised research in preparation for advanced degree thesis. **PREREQUISITE:** The formal filing of a research proposal and outline of procedures acceptable to the student's graduate committee.

† Grades of S, U, or IP will be given.

IF YOU HAVE BUILT CASTLES IN THE AIR,
YOUR WORK NEED NOT BE LOST;
THAT IS WHERE THEY SHOULD BE.
NOW PUT THE FOUNDATIONS UNDER THEM.

— HENRY DAVID THOREAU

THE FOGELMAN COLLEGE OF BUSINESS AND ECONOMICS

O. C. FERRELL, Ph.D.,
Interim Dean

IRENE M. DUHAIME, Ph.D.,
Interim Associate Dean for Graduate Studies

THE SCHOOL OF ACCOUNTANCY

KENNETH R. AUSTIN, Ph.D., C.P.A.,
Director, School of Accountancy
Associate Dean, Fogelman College of Business and Economics

GRADUATE ACADEMIC PROGRAMS

School/Department	Major	Concentration Within Major	Degree Offered
School of Accountancy	Accounting	(1) Accounting (3) Accounting Systems (3) Taxation	Master of Science (M.S.)
Department of Economics	Economics		Master of Arts (M.A.)
Fogelman College of Business and Economics (Interdepartmental)	Business Administration	1. Finance, Insurance, and Real Estate 2. Management 3. Management Information Systems 4. Marketing 5. Real Estate Development	Master of Science (M.S.)
		1. Accounting 2. Economics 3. Finance, Insurance, and Real Estate 4. Management 5. Management Information Systems 6. Management Science and Operations Management 7. Marketing 8. International Business 9. Executive 10. Law	Master of Business Administration (M.B.A.)
		1. Accounting 2. Economics 3. Finance 4. Management 5. Management Information Systems and Decision Sciences 6. Marketing	Doctor of Philosophy (Ph.D.)

The Fogelman College of Business and Economics is one of the fastest growing centers of business study in the South. The university offers the business student advanced learning and a wealth of potential material for research and study. The University of Memphis maintains extensive facilities for business research, including the Bureau of Business and Economic Research, the Center for Manpower Studies, and the Public Sector Employee-Employer Relations Center, which aid the Memphis area businesses and governmental agencies in many ways through the collection, analysis, and interpretation of business data.

MASTER OF BUSINESS ADMINISTRATION AND MASTER OF SCIENCE DEGREES

The *Master of Business Administration* degree is especially designed for students who have a bachelor's degree from arts and sciences, engineering, law or other areas of study, as well as those who hold a bachelor's degree in Business Administration. A foundation is provided for continued growth in any business endeavor or activity. Students in the M.B.A. program

may emphasize one of the following areas of study: accountancy, economics, finance, management, management information systems, management science and operations management or marketing. A joint M.B.A./J.D. concentration, an International M.B.A. concentration, and an Executive M.B.A. concentration are also available.

Students with adequate preparation in business administration and economics may complete the program in a minimum of three semesters (one calendar year). A period of five semesters is normally required of students who have no undergraduate work in business. The graduate programs of the Fogelman College of Business and Economics are fully accredited by the American Assembly of Collegiate Schools of Business.

The *Master of Science* degree is available to students desiring a higher degree of specialization than is possible under the M.B.A. program. Students may obtain the M.S. degree in The School of Accountancy with concentrations in tax, accounting systems, or accountancy, and in Business Administration with a concentration in finance, management, management information systems, real estate develop-

ment, or marketing. The Master of Arts degree is available with a major in Economics.

M.B.A. Program Admission

Admission to the Master of Business Administration, Master of Arts (Economics), and Master of Science degree programs is granted to graduates of accredited colleges and universities who show high promise of success in graduate business study. The admission requirements include the following, all of which must be completed before admission and enrollment:

1. Graduation from an accredited college or institution.
2. An application for admission and the appropriate fee.
3. An official transcript from each college or university attended.
4. Satisfactory performance on undergraduate course work and a recent (five years or less) GMAT admissions examination score. Admission to the MBA and MS programs in The Fogelman College of Business and Economics is based on a thorough review of the applicant's academic and business credentials. Primary

emphasis is placed on academic preparation. During the 1992-1993 academic year the typical successful applicant had a 3.10 grade point average (out of 4.00) and 530 score on the GMAT.

5. Qualified candidates may enter the program at the beginning of any semester.

Arrangements for taking the GMAT can be made by writing to GMAT, Educational Testing Service, Princeton, New Jersey 08540. Packets are also available in the Graduate School Office at The University of Memphis, and in the Director of Graduate Studies Office, Fogelman College of Business and Economics, The University of Memphis.

The Graduate Non-Degree classification is for students who wish to enroll in ALTERNATE CORE I graduate courses but who do not wish to pursue a graduate degree in The Fogelman College of Business and Economics. Graduate courses taken with this status may not be used toward a graduate degree in the College.

Program Prerequisites (M.B.A.)

Students who wish to pursue the Master of Business Administration degree must have completed or complete satisfactorily the proper background courses, including a Calculus course at the level of MATH 1312 or MATH 1321.

If the prospective graduate student does not have an undergraduate degree in business, but meets the entrance requirements for the graduate school given above, the student will complete the required common body of knowledge background courses with 21 credits of the ALTERNATE CORE I:

<i>ALTERNATE CORE I</i>	<i>CREDITS</i>
Financial Accounting (ACCT 7000)	3
Economic Theory (ECON 7010)	3
Statistical Methods in Business and Economics (ISDS 7020)	3
Management and Organization (MGMT 7030)	3
Financial and Legal Concepts of Business (FIR 7050)	3
Marketing Management (MKTG 7060)	3
Production and Operations Management (ISDS 7080)	3
TOTAL	21

Alternate Core I classes may not be used toward a graduate degree in the Fogelman College of Business and Economics.

Program Requirements (M.B.A.)

Each candidate for an M.B.A. degree must complete a minimum of 33 semester hours of course work and pass a written and/or oral comprehensive examination. Students are expected to finish the first five required courses before beginning the area of concentration. Part-time MBA students should take at least two courses (a 6 hour load) each semester of enrollment. The 33 graduate credits comprising the M.B.A. programs (except Executive and

International, see following sections) are distributed as follows:

<i>CORE II</i>	<i>CREDITS</i>
Required Courses	
Business Applications of Economic Theory (ECON 7100)	3
Managerial Accounting for Decision Making (ACCT 7110)*	3
Quantitative Methods for Business Decisions (ISDS 7120)	3
Seminar in Organizations (MGMT 7130)	3
Strategic Marketing (MKTG 7140)	3
Financial Management II (FIR 7150)	3
Seminar in Business Policy (MGMT 7160)**	3
And one 3 credit hour course in international business selected from ACCT 7170**, ECON 7170, FIR 7170, MKTG 7170, MGMT 7170	3
CORE II TOTAL	24
<i>Electives or Concentration Requirements</i>	9
TOTAL	33

At least 27 of the 33 hours required must be in courses designated for graduate students only (7000 level or above) exclusive of Alternate Core I prerequisites.

NOTES:

*Candidates who have completed ACCT 3310, Cost Accounting, or the equivalent must substitute ACCT 7320, Seminar in Controllershhip.

**To enroll in MGMT 7160, a student must have satisfactorily completed a minimum of 15 semester hours of Core II courses.

**MBA Students with a concentration in Accounting must take ACCT 7170

Students pursuing a concentration in accounting or information systems must take additional prerequisite coursework before beginning CORE II. See Department requirements.

Departmental Concentrations

Each department in the Fogelman College offers a concentration within the Business Administration major. The M.B.A. may be earned with a concentration in accounting; economics; finance, insurance, and real estate; management; management science and operations management; management information systems; and marketing. The department graduate adviser will assist students with the specific courses required to earn a departmental concentration.

International M.B.A. Concentration

The International Business concentration is a fixed track, two year program designed for the full-time student interested in a career in international business. The curriculum offers: specific business courses with an international orientation; required graduate language and areas studies course work; and an international business practicum or internship.

Applicants should have an undergraduate degree from an accredited college or university, and satisfactory performance

on undergraduate course work and the GMAT admissions examination. In the foreign language area, applicants should be fluent in any chosen foreign languages at the equivalent of sophomore college-level instruction. Applicants should have basic computer literacy and quantitative skills in calculus and statistics before entering in the first semester curriculum. The University of Memphis offers courses in these areas that may be taken before enrollment.

To be considered for admission, applicants should provide: (1) an application for admission and the application fee, (2) an official transcript from each college or university attended, and (3) recent GMAT scores (five years or less).

The program schedule is as follows:

<i>YEAR ONE</i>	<i>CREDITS</i>
<i>Module 1: (Fall)</i>	
International Business I.	12
Financial Accounting	
Business/Economic Theory Organizations	
Advanced Language*	
<i>Module 2: (Spring)</i>	
International Business II.	12
Financial Management	
Marketing Management	
Global Production	
Advanced Language*	
<i>Module 3: (Summer)</i>	
Area Studies and Research Skills	12
U.S. Competitiveness	
Geographical Area Study Research Methodology	
Advanced Language*	
<i>Module 4: (Fall)</i>	
Practicum in International Business	9
<i>Module 5: (Spring)</i>	
Integrative Seminars in International Business	9
Business Policy	
International Business (2 electives)	
TOTAL	54

*Descriptions of French, German, and Spanish courses may be found in the Department of Foreign Languages and Literatures section of this *Catalog*. Foreign national students have the option to choose English for their language and area studies coursework (for descriptions, see the Department of English section of this *Catalog*).

Executive M.B.A. Concentration

The Executive M.B.A. concentration is for professional and management personnel who wish to broaden and enrich their business skills. The program consists of 45 credit hours in a fixed-track format and is completed in two academic years. All participants take the same course of study and progress together through the program.

Applications are welcomed from professionals and managers who hold a bachelors' degree and who have five or more years experience in a professional

or managerial position. Admission criteria include a review of (1) recent GMAT scores (five years or less), (2) undergraduate academic performance, and (3) quality of business experience.

Listed below is the schedule of course work. Executive M.B.A. concentration classes are designed for the modular structure of the program. In August of both years, there is a one week residential management seminar that all participants must attend. During the academic year, classes meet alternate weekends on Fridays and Saturdays.

YEAR ONE CREDITS

Module 1: (August)
Management and Organization3

Module 2: (Fall)
Fundamental Business Skills9
Marketing Management
Financial Accounting
Business Applications of
Economic Theory

Module 3: (Spring)
Integrative Analysis9
Statistical Methods
Financial Management
Global Business

*Summer Project in Production or
International Business*3

YEAR TWO

Module 4: (August)
Seminar in Organizations3

Module 5: (Fall)
Advanced Decision Making Skills9
Quantitative Methods
Managerial Economics
Managerial Accounting

Module 6: (Spring)
Advanced Management Seminar9
Business Policy
Advanced Marketing
Business Environment and Ethics

TOTAL 45

Law Concentration

The M.B.A. with a Law concentration allows the student to concurrently earn an M.B.A. and a J.D. The student must be admitted to both the Fogelman College M.B.A. program and the J.D. program in the Cecil C. Humphreys School of Law. The Law concentration is composed of three law courses offered through the School of Law and approved by the associate dean for graduate programs in the Fogelman College.

M.B.A. Without a Concentration

Students who do not choose a concentration will select nine hours of electives with the prior approval of their adviser and the associate dean for graduate programs in the Fogelman College.

M.S. in Business Administration Program Requirements

Students who wish to pursue the Master of Science with a major in Business Administration and a concentration in Real Estate Development, Finance, Manage-

ment, Management Information Systems or Marketing must have completed or complete satisfactorily the proper background courses. Alternate Core I lists the required prerequisites.

Graduate students seeking the M.S. degree must also have completed an undergraduate course in Business Policy or include MGMT 7160, Seminar in Business Policy, in either their major or minor areas.

Each student in the M.S. degree program must complete three core courses:

	CREDITS
Research Methodology (MKTG 7213)	3
Information Systems in Organizations (ISDS 7465)	3
One three hour course in international business selected from ACCT 7170, ECON 7170, FIR 7170, MKTG 7170, or MGMT 7170.	3
TOTAL	9

For specific program requirements, see the appropriate department.

M.S. in Accounting Program Requirements

Students who wish to pursue the Master of Science in Accountancy must have successfully completed or complete the proper background courses. Alternate CORE I lists the required prerequisites. See the School of Accountancy for additional prerequisites and program requirements.

MASTER OF ARTS

The Department of Economics offers a graduate program leading to the Master of Arts degree. For program admissions, prerequisites, and degree requirements see the department in this section.

PH.D. IN BUSINESS ADMINISTRATION

The Ph.D. in Business Administration at the Fogelman College of Business and Economics is designed to develop the research and teaching skills necessary to become an effective academic scholar in business administration.

The Ph.D. is an advanced degree in business administration. Students with professional degrees in business, public administration, law and engineering will find the university program a sound preparation for academic advancement.

The university has the academic resources to provide the doctoral applicant with a balanced education that provides both the qualitative and quantitative skills required of the modern management education professional.

The Ph.D. student at the Fogelman College can select a concentration from one of six areas of business administration: Accounting, Finance, Management, Management Information Systems and Decision Sciences, Marketing, and Economics.

The minor may also be selected from these fields or from fields as diverse as

Tax Accounting, Educational Research, and Statistics.

Program Admission

Persons meeting the general requirements for admission to the Graduate School for doctoral level programs shall be eligible to apply for admission to the Ph.D. program.

Admission to the Ph.D. program may be granted to qualifying applicants who show high promise of success in doctoral business study. The principal criterion for admission is evidence of superior achievement in prior academic work, coupled with outstanding promise for future contributions as a business scholar. The admissions committee of the concentration department and the Associate Dean for Graduate Programs will review and evaluate each applicant.

Criteria used for evaluation include the applicant's:

- (1) Academic record: Applicant's graduate grade point average on the master's level coursework should be 3.4 or higher (on a 4.0 basis).
- (2) Testing: Applicants will present an acceptable score on a recent (five years or less) Graduate Management Admission Test.
- (3) Recommendations: Two letters of recommendation are required from former professors, colleagues, and/or business executives.
- (4) Personal Statement and Resume: Applicants will submit a written statement of career plans and objectives, and a current resume of academic and professional experiences.
- (5) Mathematics: Applicants must submit a transcript indicating the successful completion of a course in calculus.
- (6) Interview: Applicants will appear before the departmental admission committee for a personal interview.

Following admission, a student will be assigned to a departmental program committee composed of faculty members from the student's department of concentration. The program committee is responsible for planning and approving the program requirements, and for guiding and monitoring the progress of the student through the program.

Prerequisites

Students are usually admitted after completing a master's degree in business and economics. Prerequisites in the functional areas of business are determined by the departmental program committee of the student's area of concentration. A student who enters the Ph.D. program without a master's degree will initially be admitted at a graduate masters level.

Program Content

Research Core: (12 semester hours) includes courses designed to improve research skills. The courses in the Research Core will be designed by the student's departmental program committee.

Concentration and Minor: (30 semester hours) may be selected from the following: Accountancy, Economics, Finance, Man-

agement, Management Information Systems and Decision Sciences or Marketing. A minimum of 15 hours of 8000 level courses is required in the concentration. The minor (9 hours minimum) may be selected from the fields in the approved concentrations or from the several business related specialties inside and outside the Fogelman College. A minor must be approved by the student's department program committee.

Comprehensive Examinations: Each student will write comprehensive examinations in the concentration and in the minor field. Comprehensive examinations in either the concentration or minor may be taken as soon as course work has been completed in an area. After satisfactorily completing the written comprehensive examinations, each student must pass a general oral examination integrating all work. The student's program committee with participation from the minor field will organize and administer the oral examination. Comprehensive examinations are given each year in October and April.

Dissertation: (18 semester hours) requires major research of an original and creative nature and must meet the requirements of the Graduate School. The dissertation is the research capstone of the Ph.D. program and must be significant contribution to the study of Business Administration. The student will register for dissertation credit hours every semester after passing the comprehensive examinations. After the dissertation is approved by the dissertation committee, the candidate will be given a final oral examination dealing primarily with the dissertation. The examination will be conducted by the dissertation committee. If the student's performance on this examination is satisfactory as judged by the committee, all requirements for the degree will have been completed.

Language Proficiency: A student is expected to demonstrate competence in either a foreign language or advanced computer proficiency before taking comprehensive examinations. Proficiency is determined by the department program committee.

Residency

A minimum of thirty (30) semester hours of doctoral course credits, exclusive of prerequisites, language, mathematical competency and dissertation, must be completed at The University of Memphis. Students enrolled in the doctoral program must also meet the University residency requirements as defined in the Admissions and Regulations section of this catalog.

FINANCIAL ASSISTANCE

A number of doctoral graduate assistantships are available to full-time graduate students. Graduate assistants in the doctoral program provide part-time assistance to the concentration department in teaching and research. In 1992-93, compensation ranged to \$9,000, including the granting of in-state tuition status for all graduate assis-

ants. In addition, the Fogelman College has a limited number of fellowships, such as the Albert F. Wernet Scholarship in Finance and the Hart Fellowship in Strategic/Free Enterprise Management.

SCHOOL OF ACCOUNTANCY

KENNETH R. AUSTIN, D.B.A., C.P.A.

Director, School of Accountancy,
Associate Dean
Fogelman College of Business and
Economics
Room 200, Fogelman Business and
Economics Building

MICHAEL D. SHIELDS, Ph.D.,
Coordinator, Ph.D. Program

CRAIG LANGSTRAAT, LL.M., C.P.A.
Coordinator, Master's Program

I. Objectives

In the School of Accountancy, qualified students may work toward the following degree programs: Ph.D. in Business Administration with a concentration in Accounting, Master of Science with a concentration in Accounting, Master of Science with a concentration in Accounting Systems, Master of Science with a concentration in Taxation, or a Master of Business Administration with a concentration in Accounting.

The objectives of the School of Accountancy are: (1) to provide a comprehensive, state-of-the-art educational background, balanced as to conceptual versus pragmatic knowledge, that will prepare students in commerce and continue the development of their careers as professional accountants, financially oriented managers/advisors, and professors of accounting; (2) to promote both applied and theoretical research of high quality and of significance to the accounting discipline; and (3) to provide leadership and support in the areas of expertise to other academic units, the profession, the business community, and the general public.

The objective of the Ph.D. in Business Administration with an Accounting concentration and minors in taxation and accounting information systems is to prepare a student for a career in accounting education and research. The Ph.D. program is research oriented, thereby permitting students to develop the necessary skills to do scholarly research within the existing "state-of-the-art" of the discipline. Specifically, the program is designed (1) to provide candidates with an advanced level of knowledge across a broad spectrum of accounting topics as well as expertise in a chosen accounting specialization, (2) to prepare the candidate to conduct independent research and to effectively communicate research findings, and (3) to prepare the student for the various responsibilities of an academic career.

The Ph.D. program is a learning process in which the student obtains understanding of and the ability to do scholarly research. This process involves interaction among faculty and students in courses, in workshops, in teaching, and in individual research projects. The culmination of the process is the dissertation. The dissertation must be an original research project prepared by the student and defended before a committee of the faculty. This dissertation is expected to be a basis for a student to begin his/her academic career. The project should be of substantial quality and lead to publications in scholarly journals.

Students are expected to be enrolled in the program on a full-time basis during their course work and one year during their dissertation stage. This commitment is expected to require three to four years of full-time study. Course work should be completed within two to three years, depending upon a student's prior academic background.

The objective of the Master of Science degree with a major in Accounting is to offer candidates a balanced, eclectic approach to accounting education with an interdisciplinary view. The 30-hour master's program emphasizes business knowledge for decision-making with applications. Three concentrations within the major are offered: accounting, accounting systems, and taxation.

The objective of the Master of Business Administration program with a concentration in accounting is to

provide candidates with basic conceptual knowledge of accounting and special insights into the nature, limitation, interpretations, and uses of financial information which serve as a foundation for accounting career development.

II. General Admission and Prerequisite Requirements

A. Program Admission

Satisfactory scores on both the verbal and quantitative sections of the Graduate Management Admissions Test (GMAT) and a satisfactory grade point average (GPA). Undergraduate applicants may be permitted to enter the 30 hour master's degree program at the end of their junior year as the final part of the 158 hour professional accounting program (contact the graduate coordinator for specific requirements).

B. General Prerequisites

1. Students must have general education courses which include the following: a. English communication arts including writing, composition and oral expression. b. Behavioral sciences and humanities such as psychology, anthropology and sociology. c. Political and legal environment of business and society such as political science, public administration, and ethics. d. Mathematics including probability theory and statistics.

2. Students must complete Core I prerequisites summarized at the beginning of the College section except that ACCT 2410 may be substituted for ISDS 2750.

3. Successful completion of the following accounting courses or their equivalents:

- ACCT 3110, 3120 (Intermediate Accounting I and II)
- ACCT 3310 (Cost Accounting)
- ACCT 3510 (Federal Income Tax I)
- ACCT 4020 (Accounting Systems)
- ACCT 4240 (Auditing)

III. Specific Program Admission and Prerequisite Requirements

A. Ph.D. in Business Administration with Concentration in Accounting

1. **Admission:** Students can be admitted to the Ph.D. program with a) Baccalaureate degree in Business or Economics, plus b) Masters degree in Accounting, or a Masters degree in Business Administration with a concentration in Accounting, or a Masters degree in Taxation preferably from an AACSB accredited program.

2. **Prerequisites:** The minimum prerequisites for the Ph.D. program are as follows:

- An undergraduate accounting core as defined by the School of Accountancy.
- Proficiency in quantitative methods, and computer applications
- Graduate accounting courses which are at an advanced level. These courses must meet with the approval of the student's graduate committee
- Other business and economics courses which support the student's development within the Ph.D. program.

While graduate courses can be substituted for undergraduate prerequisites, they will not be counted toward meeting the graduate accounting courses requirement. These courses must be approved by the student's graduate committee and the coordinator of the Ph.D. program.

3. **Requirements:** In addition to the requirements of the College for the Ph.D. degree, the following are required for the concentration in accountancy: a minimum of 15 hours at the 8000 level which shall include ACCT 8610, 8620, 8710, 8720 and 8730/8731.

Additional requirements and guidelines are outlined in the school's Policies and Procedures Manual.

B. Master of Science Degree

Each candidate must complete a minimum of 30 hours of graduate study of which 15 hours must be in ACCT 6241, 6520, and accounting 7000 level courses beyond ACCT 7000 and ACCT 7110, including the following:

1. **Core requirements:** ACCT 7210, Advance Financial Reporting (3); ACCT 6241, Advanced Auditing (3); ACCT 6520, Advanced Taxation (3).

2. **General Requirements:** 9 hours selected in consultation with major advisor, including ENGL 7807, Workshop: Government and Corporate Writing, or ENGL 7808, Workshop: Scientific and Technical Writing, or MGMT 7173, Executive Communication; MKTG 7235, Special Topic: Professional Salesmanship, or MKTG elective; and non-accounting elective.

3. **Concentrations:**

a. **Accounting:** ACCT 7320, Seminar in Controllership (3). ACCT 7020, Advanced Accounting Systems (3),

and six hours selected from the following: ACCT 7241, Seminar in Auditing (3), ACCT 7120, Advanced Accounting Theory (3), ACCT 7310, Advanced Cost Accounting (3), and ACCT 7330, Cost Management Systems Techniques (3).

b. *Taxation*: ACCT 7510, Tax Research and Theory (3); ACCT 7511, Federal Taxation of Partnerships and Partners (3); ACCT 7512, Federal Income Taxation of Corporations and Shareholders (3); ACCT 7514, Estate and Gift Taxation (3).

c. *Accounting Systems*: ACCT 7020, Advanced Accounting Systems (3), ACCT 7021, Multiuser Accounting (3), ACCT 7022, Accounting Systems Development (3), a 3 hour related elective approved in advance by the coordinator of the concentration.

C. *Master of Business Administration with Concentration in Accounting*

Requirements: ACCT 7120, Advanced Accounting Theory (3); 7320, Seminar in Controllorship (3); accounting electives (any 6 hours of 7000 level accounting courses except ACCT 7000 or 7110); and 7170, International Accounting. (3).

H510 ACCOUNTING (ACCT)

6241. **Advanced Auditing**. (3). (7240). Comprehensive audit practice case, review of key statements on auditing standards, accounting and review service statements, attestation standards statistical sampling plans and selection techniques for attribute and variables sampling, EDP audit topics. PREREQUISITE: ACCT 4240.

6520. **Advanced Taxation**. (3). (7500). Laws and regulations for corporations, partnerships, estate, and fiduciaries; project on tax research. PREREQUISITE: ACCT 3510.

7000. **Financial Accounting**. (3). (7001). Accelerated and in depth introduction to the conceptual foundations of accounting. The subject is presented as a dynamic information system for measuring and communicating economic and financial data for planning and control purposes. Primarily for non-business students but is acceptable to remove accounting prerequisites for the M.B.A. and M.S. programs in the College of Business and Economics.

7020-8020. **Advanced Accounting Systems**. (3). Accounting systems analysis and design; emphasis on database information structures. Advanced system analysis tools; integrating accounting and computer controls; use of state-of-the-art database package leading to development of working accounting module. On-site practicum. PREREQUISITES: ACCT 2410 and 6020.

7021. **Multiuser Accounting Systems**. (3). Environment of multiuser accounting; audit trail and internal control considerations in centralized versus distributed accounting systems; design considerations of computerized accounting subsystems, including accounts receivable, accounts payable, payroll and general ledger. PREREQUISITES: ACCT 7020, ISDS 7060.

7022. **Accounting System Development**. (3). Development of working computerized accounting systems; overview of CASE Tools for accounting systems development; accounting file design, accounting user interface characteristics, accounting report generation considerations; complete development and programming of working accounting subsystem modules by student teams. PREREQUISITES: ACCT 7020, ISDS 7060.

7110. **Managerial Accounting for Decision Making**. (3). (7010). Accounting analysis for decision making utilizing such managerial accounting tools as cost/benefit analysis, capital budgeting, variable (direct) costing, product costing and pricing, variance analysis and other decision-making techniques as well as case studies and/or research projects. PREREQUISITE: ACCT 2020 or 7000, or consent of director. Not open to students with more than 12 hours in accounting.

7120. **Advanced Accounting Theory**. (3). Conceptual framework and theoretical aspects of accounting with emphasis on modern accounting trends; contemporary controversial topics in accounting; accounting research.

7130-8130. **Development of Accounting Thought**. (3). (7710-8710). Readings of the outstanding writers from ancient times through the present.

7170-8170. **International Accounting**. (3). International accounting problems, including accounting by multinational corporations, foreign currency translation, institutional structures, financial control and reporting for international operations, comparative analysis of accounting principles and auditing standards of various countries. PREREQUISITE: ACCT 7000 or equivalent.

7190. **Advanced International Accounting Policies**. (3). International accounting issues in financial, managerial, tax, and auditing. PREREQUISITE: ACCT 7170.

7210. **Advanced Financial Reporting**. (3). Partnerships, statement of affairs, receiver's accounts, statement of realization and liquidation, business combinations and consolidated financial statements, fund accounting, international accounting. PREREQUISITE: ACCT 3120.

7241. **Seminar in Auditing**. (3). Authoritative internal audit standards, ethics of internal auditors, techniques of efficiency and effectiveness audits. PREREQUISITE: ACCT 4240.

7310. **Advanced Cost Accounting**. (3). Budgets, determination of standards, variances and their functions, cost reports, profit projecting, direct costing, gross profit and breakeven analysis, cost-profit volume analysis, capital expenditure control, comparative cost analysis. PREREQUISITE: ACCT 3310.

7320. **Seminar in Controllorship**. (3). Controllorship function; evolution of management accounting; conceptual framework of management accounting compared and contrasted with financial accounting; functional tools used by controllers; emphasis on research, written and oral communication skills in context of management accounting. PREREQUISITE: ACCT 3310.

7321. **Management Advisory Services**. (3). Management advisor, services and tools and techniques used in engagements; planning, preparing, and presenting proposals, managing projects, and utilizing advisor, services skills. Ethical considerations included.

7330. **Cost Management Systems Techniques**. (3). Cost management systems with emphasis on actively based costing, product life-cycle management, quality costs, performance management, strategic cost management, logistics, and Japanese cost management techniques. TOC for accounting. PREREQUISITE: ACCT 3310.

7510-8510. **Tax Research and Theory**. (3). Advanced study of Federal taxation with emphasis on tax research methodology and various theoretical precepts; integration of basic tax knowledge with skillful tax research to accomplish desired ethical tax objectives. PREREQUISITE: ACCT 6520.

7511-8511. **Federal Income Taxation of Partnerships and Partners**. (3). Tax law organization, operation, and liquidation of partnerships. General overview of Subchapter K, acquisitions of partnership interests, basis of partner's partnership interest, taxation of partnership operations, transfers of partnership interests, partnership distributions, death or retirement of partner, adjustments to basis of partnership assets. PREREQUISITE: ACCT 7510 or permission of the instructor.

7512-8512. **Federal Income Taxation of Corporations and Shareholders**. (3). Tax law; organization, operation and liquidation of corporations. Organization of corporation under Code Section 351 and related problems; corporation's capital structure; corporate income tax; corporate elections under Subchapter S; stock redemptions and partial liquidations; and corporate reorganizations and liquidations. PREREQUISITE: ACCT 7510 or permission of the instructor.

7513-8513. **Advanced Federal Taxation of Retirement Plans**. (3). Various plans and qualification of requirements under the Employee Retirement Income Security Act of 1974 (ERISA). Emphasis on qualified pension, profit-sharing and stock bonus plans, retirement plans for self-employed individuals, individual retirement accounts (IRAs), nonqualified deferred compensation plans, restricted property plans, stock options, tax planning considerations. PREREQUISITES: ACCT 7510 or permission of the instructor.

7514-8514. **Estate and Gift Taxation**. (3). Transfer taxes (gift tax, estate tax, generation-skipping transfer taxes); all states on transfer of property accumulated after imposition of income tax; federal gift and death taxes with emphasis on tax planning. PREREQUISITE: ACCT 7510 or permission of the instructor.

7515-8515. **Tax Administration, Practice and Planning Considerations**. (3). Introduction to overall organizational structure of Internal Revenue Service and operating procedures concerning individual rulings, additional issuances, the audit process, and its administrative powers. Rules governing tax practice including Treasury Department Circular 230. Strategies in seeking Administrative Rulings, the IRS audit, litigation considerations, penalties, statute of limitation of refund claims. PREREQUISITE: ACCT 7510 or permission of the instructor.

7518-8518. **Selected Topics in Taxation**. (3). Special tax considerations of individuals, partnership, corporations, estates, trusts, exempt organizations and governmental entities. PREREQUISITE: ACCT 7510 or permission of the instructor.

7519-8519. **Advanced Federal Income Taxation of Corporations and Shareholders**. (3). Concepts and principles related to federal income taxation of corporate reorganizations, corporate divisions, and taxation of affiliated corporations; tax consequences to corporate shareholder. Emphasis on code, regulations, court decisions, and research. PREREQUISITE: ACCT 7512.

7520-8520. **Federal Income Taxation of Trusts & Estates**. (3). Tax law as it relates to Subchapter J; general overview of nature of trusts and estates during their existence and administration, taxable income of trusts and estates, taxation of beneficiaries, character of income, throwback rule, grantor trusts, tax planning considerations. PREREQUISITE: 7510 or permission of the instructor.

7820-8820. **Expert Systems in Accounting**. (3). Techniques and tools for building expert systems; use of expert systems in accounting; evaluation and validation of expert systems. Includes project involving construction of expert system.

7900-8900. **Research Practicum in Accounting for Graduate Students**. (1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of accounting. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7901-8901. **Teaching Practicum in Accounting for Graduate Students**. (1-6). Practical demonstrations of and experience in the art of teaching accounting topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7902-8902. **Workshop in Accounting for Graduate Students**. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in accounting. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7910. **Problems in Accounting**. (1-3). Directed independent reading and research projects in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Permission of the director.

7911. **Accounting Internship**. (1-6). Internship in business organization to gain on-the-job experience and to develop writing, organizational, and applied performance skills. Projects approved and supervised by School of Accountancy. Note: Credit not applicable to M.S. in Accounting. PREREQUISITE: Graduate standing and permission of director of School of Accountancy.

7920-7929. **Special Topics in Accountancy**. (1-3). Varied topics. May be repeated with change in topic. PREREQUISITE: Permission of director of School of Accountancy.

7996. **Thesis**. (3-6). Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of the Graduate School.

8000. Independent Accounting Research. (3). Research problem related to student's field of concentration under direction of a faculty member.

8610. Research Methods in Accounting. (3). Scientific method of research, different taxonomies and framework of research concepts; critiques of accounting research articles; formulation and execution of researchable topic which synthesizes knowledge gained through study of research topics.

8620. Normative Accounting Theory. (3). (8110). Descriptive and normative views of financial accounting theory; classical decision usefulness, information usefulness and events approaches; contemporary controversial topics including Conceptual Framework, Statements of Financial Accounting Concepts, lobbying regulations and choice of financial accounting principles.

8710. Financial Accounting Research. (3). (8920). In-depth study of existing body of literature in various areas of empirical accounting research. Emphasis on research design and methodology. Design and development of individual research projects.

8720. Seminar In Accounting Research and Human Information Processing. (3). (8210). Current research on decision making and judgement behavior in accounting; theories, models, and empirical evidence about how accountants make professional judgements; selected readings from relevant source fields. Alternative methods for conducting empirical research.

8730. Managerial and Behavioral Accounting Theory and Research. (3). (8310). Theoretical framework of managerial and behavioral accounting related to decision making processes of management. Influence of behavioral science on budgeting techniques and managerial information and control systems. Behavioral accounting research.

8731. Seminar in Management Accounting. (3). Background for management accounting research; quantitative aspects of management accounting; analytical and communication skills in decision making; mathematical modeling research in management accounting; alternative conceptual approaches to development of models to explain existence of observed management accounting techniques. **PREREQUISITES:** ACCT 7320 or equivalent and admission to doctoral program.

† Grades of S, U, or IP will be given.

tional business area selected by student with approval of supervising faculty member. **PREREQUISITE:** Permission of associate dean for graduate studies.

7950. Practicum in International Business. (3-9). Practicum in foreign business or academic organization to gain management skills and experience; work experience in non-English speaking country; enrollment must be approved by the associate dean for graduate studies. **PREREQUISITE:** 12 hours of graduate business courses.

8920. Dissertation Seminar. (1-3). Research design and methodology in administrative sciences. Allows the student to prepare a dissertation proposal, and provides guidance in that effort. Students are expected to present progress reports to other seminar members to critique the progress of fellow students and acquire skills and knowledge in the area of research design and methodologies. To be taken during the last 12 hours of doctoral coursework.

†9000. Dissertation (1-12). Independent research for Doctor of Business Administration degree. Application for writing a dissertation must be filled out on an approved form after consultation with the Doctoral Advisory Committee and filed with the Dean of Graduate Studies.

† Grades of S, U, or IP will be given.

ECONOMICS

DONALD R. WELLS, Ph.D. *Chair*
Room 400 Fogelman Business and
Economics Building

JULIA A. HEATH, Ph.D.,
Coordinator of Master's Program

WILLIAM T. SMITH, Ph.D.,
Coordinator of Doctoral Program

I. In the department of Economics, qualified students may work toward the M.A. degree with a major in Economics, the M.B.A. degree with a concentration in Economics, or the Ph.D. degree in Business Administration with a concentration in Economics.

II. M.A. Degree Program

A. Program Admission:

1. Satisfactory performance on the Graduate Record Examination (Satisfactory performance on the Graduate Management Admission Test may be acceptable with approval of the department chair.)
2. Satisfactory undergraduate grade point average.

B. Program Prerequisites:

Students should have successfully completed or complete ECON 3310, Microeconomic Theory; ECON 3320, Macroeconomic Theory; ISDS 2710 and 2711 Business Statistics I and II. (ISDS 7020 is an acceptable substitute for ISDS 2710 and 2711.)

C. Program Requirements:

1. Each candidate must complete a minimum of 33 semester hours of graduate course work, 30 hours if a thesis of 6 hours is written. The 33 hours must include a minimum of 21 hours (18 hours if a thesis is written) of approved course work in Economics. The remaining 12 hours, with approval of the department graduate adviser, may be taken in collateral courses.

2. At least 24 of the 33 (or 21 of 30 with a thesis) hours required must be in courses designated for graduate students (7000 level or above), exclusive of M.A. program prerequisite courses and M.B.A. Alternative Core I courses.

3. Of the 21 (18) hours of course work in economics, 9 hours must be devoted to three required courses: ECON 6810, ECON 7310, and ECON 7320.

4. A student who selects the comprehensive examination option must pass written examinations in

microeconomic theory, macroeconomic theory, and applied economics. If the student does not pass all three exams, only those exams not passed need to be re-taken. A maximum of three attempts within a year of the first attempt is permitted.

5. A student who selects the thesis option may submit a written masters thesis instead of taking comprehensive examinations. Students may earn up to six hours credit for writing a thesis (and registering for ECON 7996), but no more than three hours can apply to the 33 hours needed to graduate.

III. M.B.A. Program

See the beginning of this College section for admission, prerequisites and program requirements.

IV. Ph.D. Program

The objective of the Ph.D. in Business Administration with a concentration in Economics is to prepare candidates for a successful academic or professional career in economics and business. Through an intensive, advanced level training in both economic theory and quantitative methods, students learn to conduct independent research and prepare for various responsibilities of a professional career. The Economics Department has an outstanding faculty with a strong orientation in applied as well as theoretical research. For admission, program content, and financial aid information, see the beginning of this College section, or write to the chair of the department.

H520 ECONOMICS (ECON)

6130. Government Regulation of Business. (3). The several approaches to legal and legislative control of businesses—especially tax laws, commission regulation, and anti-monopoly legislation—are considered in view of the impact of each on industrial operating policy and corporate social responsibility.

6810. Quantitative Economic Analysis. (3). Introduction to mathematical techniques used in economics, including algebra, matrices and determinants, differential and integral calculus.

7010. Economic Theory. (3). Investigation of microeconomic and macroeconomic theory. Topics include: supply and demand, production and cost, competition and monopoly, income determination, unemployment, inflation, and government budget. **PREREQUISITE:** Fewer than six hours of undergraduate economics or permission of instructor.

7100. Business Applications of Economic Theory. (3). (7020). Application of economic concepts to business enterprise. Emphasis on demand and supply analysis, efficient production and cost control, pricing and output decisions under alternative market types, income and employment determination, and impact of inflation and government on business firm. **PREREQUISITE:** ECON 7010 or equivalent or permission of instructor.

7110-8110. Managerial Economics. (3). Economic rationale underlying key management decisions. Managerial problems are identified and examined in the light of relevant economic concepts, and remedial action is plotted on the basis of economic logic. **PREREQUISITES:** ECON 7100 and 7171 or equivalent or permission of instructor.

7121-8121. Economic Forecasting. (3). Time series statistical analysis of regional and national economic indicators; data on industries, commodities, services, financial instruments and sectors of the economy. **PREREQUISITE:** ECON 7100 or permission of instructor.

7130-8130. Industrial Organization. (3). Historical analysis of the structure, conduct, and performance of the major industries with oligopolistic market structures. Review of antitrust policy, the economics of public utilities, and government promotion and regulation of competition. **PREREQUISITE:** ECON 7100 or equivalent or permission of instructor.

7170. International Trade and Investments. (3). Financial flows in international setting, problems related to international debt; international trade theory, policy, monetary systems, balance of payments, and adjustment mechanisms; trade and commercial policies. **PREREQUISITE:** ECON 7010 or permission of instructor.

BUSINESS ADMINISTRATION

The courses listed below are designated with "BA" numbers in order that they may be available to advanced graduate students with a major in the Fogelman College of Business and Economics. They will be accepted toward the completion of the degree requirements.

H500 BUSINESS ADMINISTRATION (BA)

7800. Internship in Business. (1-6). Internship in business organization to gain on-the-job experience in actual management environment; project to be approved by associate dean and supervised by graduate faculty. **PREREQUISITES:** 15 semester hours of graduate credit and minimum GPA 3.25.

7900. Practicum in Research. (1-3). Designed to expose the student to actual problem-solving research activities in business and economics. Each student is assigned to a project that is either being conducted currently by a faculty member or one that is developed under the supervision of a faculty member. Whenever possible the project will be within the student's major field of study. **PREREQUISITE:** Advanced graduate student.

7910. Problems in International Business. (3-6). Directed independent study and research in interna-

7171-8171. Business and Economic Research. (3). Basic research techniques and their application to business and economic problems. Attention to both primary-source and secondary-source study approaches. Critical evaluation of selected sample studies. PREREQUISITES: ISDS 7020 and MATH 1312.

7210-8210. Labor Economics. (3). Use of theory and statistical techniques to analyze determination of wage rates and employment and working conditions in labor markets under conditions of competition and collective bargaining. PREREQUISITE: ECON 7100 or equivalent or permission of instructor.

7260-8260. Environmental Economic Policy. (3). Effectiveness of regulation, prohibition, zoning, subsidies, and effluent charges as methods of mitigating environmental decay. PREREQUISITE: ECON 7100.

7310-8310. Advanced Microeconomics I. (3). Neoclassical and non-neoclassical micro theories of economic behavior with applications. Advanced study of economics of firm and price theory, with emphasis on developing ability to apply tools of microeconomic theory to firm. Emphasis on methodological significance of alternative theoretical formulations and meaning and empirical interpretation of theoretical assumptions and conclusions. Topics include: demand and supply theory, identification of real-world demand and supply functions, profit maximization under both competitive and non-competitive conditions, production theory, and income distribution theory. PREREQUISITE: ECON 3310 or 7100.

7312-8312. Economic Behavior and Institutions. (3). Models of real-world economic behavior and institutions commonly considered deviations from neoclassical micro- and macro-economics. Use of systems theory, catastrophe theory, and game theory. Focus on market failure, property failure, catastrophic discontinuity, transaction costs, information costs, type I and type II errors, institutional channeling of behavior, and strategic behavior. PREREQUISITE: ECON 3310 or 7100.

7313-8313. Economics of Risk and Uncertainty. (3). Behavior of firms and consumers taking risks; implications for market efficiency; role of information; formation of expectations; game theory and experimental methods in verifying conjectures. PREREQUISITES: ECON 4810-6810 and ECON 7100 or permission of instructor.

7320-8320. Advanced Macroeconomics I. (3). Theory of national income, prices, interest rates, wages and employment, including Neoclassical, Keynesian and Monetarist approaches; equilibrium analysis, stability, economic growth, foreign trade, use of policy. PREREQUISITES: ECON 3310 and ECON 3320, or ECON 7100.

7330-8330. History of Economic Thought. (3). In-depth analysis of great thinkers in development of economic theory and policy. Data on Ricardo, David Ricardo, John Stuart Mill, Karl Marx, Alfred Marshall, John Maynard Keynes and selected contemporary economists. PREREQUISITE: ECON 7100 or equivalent or permission of instructor.

7350-8350. International Monetary Theory and Policy. (3). Foreign exchange markets, international flows of capital, aggregate output and price in an open economy, economic development, instruments of macroeconomic policy under a variety of exchange rate systems. PREREQUISITES: ECON 4350 or ECON 7170, and ECON 3320 or ECON 7100.

7351-8351. U.S. Competitiveness In the World Economy. (3). Nature, causes and proposed remedies of America's declining international competitiveness, with focus on Japanese economic challenge; meaning and measurement of competitiveness; microeconomic and macroeconomic aspects; government policy; cultural dimensions. PREREQUISITES: ECON 4350 or ECON 7170, or permission of instructor.

7501-8501. Urban and Regional Economics. (3). Analysis of spatial aspects of economic theory and particular problems of urban and regional economies. Topics include location theory, regional growth and trade patterns and economics of housing and poverty. PREREQUISITE: ECON 7100 or equivalent or permission of instructor.

7611-8611. Monetary Theory and Policy. (3). Monetary theory with particular emphasis on the current controversies in the field and their implications for policy. Recent contributions carefully examined and evaluated. PREREQUISITE: ECON 3320 or equivalent.

7710-8710. Health Care Economics. (3). Topics include unique nature of health care as economic good, health care market and its participants including patients, physicians, hospitals, and financing and delivery of personal health care in United States and other countries.

7720-8720. Seminar in the Economics of the Public Sector. (3). Emphasis on: the production of public goods—financing of public goods; and the problems created by a federal fiscal system. Current problems and policy decisions. Public finance theory and policy will be analyzed.

7730-8730. Economics of Not-for-Profit Organizations. (3). Origins, logic and growth of not-for-profit organizations, entrepreneurship in this setting, rationale for creating organizations from voluntary/unfair competition; roles in market economies. PREREQUISITE: ECON 7100 or permission of instructor.

7740-8840. Applications of Health Care Economics. (3). Analysis of health care costs, employee health plans and third party reimbursement mechanisms; business and union strategies for health care. PREREQUISITES: ECON 7710-8710 and 7100 or equivalent or permission of instructor.

7750-8750. Pharmaceutical Care Economics. (3). Economic analysis and government regulation of the drugs industry and pharmacy health care manpower. Emphasis on industry's organization and its heightened interactive importance with other health care markets. PREREQUISITE: ECON 7710 or equivalent or permission of instructor.

7810-8810. Econometrics. (3). Use of quantitative and statistical techniques in estimation and testing of economic theories. Emphasis on use of microcomputer regression software. PREREQUISITE: ECON 6810 and 7171 or equivalent or permission of instructor.

7811-8811. Advanced Econometrics. (3). Advanced treatment of non-ideal conditions and extensions of the linear regression model; generalization to least squares, specification error tests, simultaneous equations models and models with limited dependent variables. PREREQUISITE: ECON 7810-8810.

7900-8900. Research Practicum in Economics for Graduate Students. (1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of economics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7901-8901. Teaching Practicum in Economics for Graduate Students. (1-6). Practical demonstrations of and experience in the art of teaching economics topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7902-8902. Workshop in Economics for Graduate Students. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in economics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7910-8910. Problems In Economics. (1-6). Directed independent reading and research in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Permission of the Department Chair.

7940-49-8940-49. Special Topics In Economics. (3). Special areas of economics not otherwise included in the curriculum. Consult *Schedule of Classes*.

7996. Thesis. (3-6). Application for writing a thesis must be filled out on an approved form after consultation with the major professor, and filed with the Dean of Graduate Studies. Independent research for the master's degree.

8311. Advanced Microeconomics II. (3). Neoclassical and modern treatments of demand and production theories, quality in cost and production relations, constrained utility maximization, consumer expenditure allocation over time and under uncertainty, welfare economics, decision theory, risk aversion, principal agent models, theory of games. PREREQUISITES: ECON 4810-6810 and ECON 7310-8310.

8321. Advanced Macroeconomics II. (3). Seminar emphasizing recent journal literature in macroeconomic theory. New Classical and Nonclassical models and rational expectations, with implications for monetary and fiscal policy. PREREQUISITE: ECON 7320-8320.

† Grades of S, U, or IP will be given.

FINANCE, INSURANCE, AND REAL ESTATE

MARS A. PERTL, Ph.D., *Chair*
Room 402 Fogelman Business and
Economics Building

L. S. SCRUGGS, Ph.D.

Coordinator of Graduate Studies

I. The Department of Finance, Insurance, and Real Estate offers the Master of Science degree with a major in Business Administration and a concentration in Finance or Real Estate Development; the Master of Business Administration with a major in Business Administration and a concentration in Finance Insurance and Real Estate; and the Ph.D. in Business Administration with a concentration in Finance.

II. M.S. Program

See the beginning of this College section for admission, prerequisite and program requirements.

1. Concentration in Finance, Insurance and Real Estate

a. Each candidate must complete a minimum of 33 semester hours of approved graduate courses. The 33 graduate credits include a minimum of 21 hours in the concentration (24 if a thesis is written). The required core of courses in the Finance concentration include:

FIR 7150 Financial Management II

FIR 7410 Investment Theory and

Portfolio Management, and

FIR 7840 Quantitative Applications for Finance
b. Three semester hours in a collateral area approved by the student's advisor. This will include MGMT 7160 (Seminar in Business Policy) if an integrating business policy course has not been successfully completed.

c. At least 24 of the 33 credit hours required must be in courses designated primarily for graduate students (7000 level or above).

d. Must pass a written and/or oral examination.

2. Concentration in Real Estate Development

a. Each candidate must complete a minimum of 33 semester hours of approved graduate courses, of which at least 24 semester hours must be in courses designated primarily for graduate students (7000 level or above).

b. A minimum of 21 semester hours must be completed in the concentration. The required courses are:
FIR 6310 Real Estate Law
FIR 6340 Real Estate Appraisal
FIR 7301 Seminar in Real Estate
FIR 7302 Real Estate Development
FIR 7320 Real Estate Finance
FIR 7350 Real Estate Investment
FIR 7910 Research Problems

c. Three semester hours must be completed in a collateral area approved by the student's advisor. This will include MGMT 7160 (Seminar in Business Policy) if an integrative business policy course has not been previously completed.

d. Candidates must pass a written or oral comprehensive examination.

III. M.B.A. Program

See the beginning of this College section for admission, prerequisite and program requirements.

IV. Ph.D. Program

See the beginning of this College section for admission, prerequisites, and program requirements.

H530 FINANCE, INSURANCE, AND REAL ESTATE (FIR)

6011. Estate Planning and Law of Taxation. (3). A survey course of the law of taxation as applied to the transmission of property by gift or death and its impact upon accumulations of wealth. Estate planning from an individual viewpoint designed to create, maintain and distribute the maximum estate possible. PREREQUISITE: FIR 3011 or permission of the instructor.

6310. Real Estate Law. (3). This course covers law and legal instruments as applied to real estate. It is designed to serve the needs of property owners and those engaged in the real estate business.

6340. Real Estate Appraisal. (3). Basic terminology, principles, procedures, and issues; nature of value, principles of value, appraisal process, market approach, cost approach, capitalization of income approach, gross rent multiplier approach, and appraisal reports.

6610. Cases in Managerial Finance. (3). Application of tools and principles introduced in previous courses to develop up-to-date problem solving techniques. Cases approached from standpoint of top level management, utilizing both quantitative and qualitative analysis. PREREQUISITE: FIR 7070 or equivalent.

6720. Operations and Management of Financial Institutions. (3). Financial policies and decision-making peculiar to financial institutions in the United States. Management of institutions consistent with adequate standards of liquidity and solvency. PREREQUISITES: FIR 3410 and FIR 3720.

6810. Property and Liability Insurance (3). Forms and functions of fire, marine, automobile, general liability, and other types of property and liability insurance. Emphasis on business and industrial applications.

6820. Life and Health Insurance. (3). Functions of life and health insurance. Emphasis on economic security needs, human behavior, and problems related to death and dying. Individual life, health, and annuity contracts and social insurance. Concepts in risk selection and regulation.

6840. Multiple Line Insurance Company Operations. (3). Company and industry functions other than contracts, including rating, rate-making, reserves, auditing, underwriting, reinsurance, claims production engineering, and governmental supervision.

6860. Employee Benefit Programs. (3). Analysis of life, health, and pension benefit programs from viewpoint of benefit planner. Topics include reasons for providing such programs, alternate methods for providing benefits, and broadly designing specifications for benefits.

6880. Risk Management Finance. Integrating financial theory into practice of risk management for the firm; quantitative tools to carry out risk management process by developing spreadsheets to measure expected loss, determine appropriate risk handling methods, and analyze risk financing arrangements. PREREQUISITES: FIR 7050 or equivalent.

7040. Business Environment and The Law. (3). (7011). Legal procedure and the law of contract, sales, negotiable instruments, creditor's rights, agency, business organizations and property will be considered. Business environmental aspects of court decisions and administrative agencies respecting the regulation of business, taxation, antitrust law,

labor law, consumer and environmental protection laws.

7050. Financial and Legal Concepts for Business. (3). Business finance and legal, social, and political environment of business; prerequisite for MBA Core II. PREREQUISITE: ACCT 7000 or equivalent.

7070. Financial Management I. (3). (7010). Discounting, risk measurement, valuation, capital budgeting, cost of capital, capital structure, dividend policy, working capital, financial instruments, and markets. PREREQUISITE: ACCT 7000 or equivalent.

7150. Financial Management II. (3). (7610). Analytical tools, concepts and decision rules for acquisition and allocation of funds by the business firm. Topics include: capital budgeting under risk, capital rationing, cost of capital, capital structure, dividend policy, and working capital management. Cases and readings may be required. PREREQUISITE: FIR 7050 or equivalent.

7170. International Financial Management. (3). (7620). Selected problems in international finance, foreign investment and the international payments system; gold movements; foreign central banking and international aspects of money markets; the impact of international financial cooperation. PREREQUISITES: FIR 3410; ECON 3610; or permission of instructor.

7171. International Financial Intermediation. (3). Process which facilitates flow of funds across national borders as a result of capital placements and financing of international trade; detailed analysis of international financial markets and intermediaries; how national governments and international organizations regulate, supervise, and tax financial intermediaries in integrated worldwide financial system.

7301. Seminar in Real Estate Finance, Investments and Valuation. (3). An investigation of significant current topics in real estate finance, investments and valuation, individual research and group discussion of recent developments in theory and practice.

7302. The Decision Process in the Development of Commercial and Industrial Real Estate. (3). Analysis of methodologies and market strategies in the evaluation of investments in commercial and industrial land development. To identify, conceptualize and to execute action programs associated with developing successful real estate projects, industrial parks, warehouse-distribution centers, and related land uses.

7320. Financing Real Estate Transactions. (3). Economic, institutional, and legal issues associated with real estate finance; Emphasis on investor and developer financing, and secondary mortgage market.

7350. Real Estate Investment Analysis. (3). Analytical tools, concepts, and decision rules for real estate asset acquisition and disposition; ownership forms, tax structuring, cash flow forecasting, risk analysis and decision making.

7410-8410. Investment Theory and Portfolio Management. (3). Introductory graduate level course in the area of investments and portfolio management. Considers qualitative and quantitative risk and return characteristics of various investment opportunities, fundamental valuation models, timing techniques, efficient markets, speculation and hedging, and portfolio theory and practice. PREREQUISITE: FIR 7070 or equivalent.

7710-8710. Seminar in Investment Theory. (3). Current literature in investment theory and portfolio analysis. Topics include statistical techniques of analysis, technical analysis, fundamental analysis, investor perceptions, efficient markets, investigation of risk measurements, portfolio theory and applications, and speculative markets. PREREQUISITE: FIR 7410 or permission of instructor.

7720-29-8720-29. Current Topics in — (3). In-depth investigation of selected current topics in Finance and related areas. Topic areas change each semester as determined by relevant developments in Finance. The course may be repeated twice with a

change in content. The student should consult the Schedule of Classes to determine the current topic. (Maximum 9 hours credit.) PREREQUISITE: Permission of instructor.

7721-8721. Speculative Markets. PREREQUISITE: FIR 7410 or 3710 or equivalent.

7722-8722. Working Capital Management

7723-8723. Financial Institutions

7724-8724. Micro-Structure Theory

7725-8725. Micro-Structure Applications. PREREQUISITE: COMP 601 or equivalent.

7800. Law for CPAs. (3). Statutory, regulatory, and common law principles encountered in public accounting; preparation for Business Law Section of CPA examination.

7810-8810. Advanced Financial Management. (1-6). The most significant contributions to the advanced literature on managerial finance. Topics include capital budgeting under risk, capital rationing, cost of capital, capital structure, dividend policy, firm valuation, and working capital management. PREREQUISITE: FIR 7150 or equivalent.

7840-8840. Quantitative Applications for Finance.

(3). Application of statistical and quantitative tools to problem solving and decision-making in all finance disciplines; spreadsheet analysis, linear programming, and regression analysis; extensive use of personal and mainframe computer software packages. PREREQUISITE: FIR 7150, ISDS 7120 or equivalent.

7910-8910. Problems in Finance, Insurance, and Real Estate. (2-4). Directed independent reading and research projects in the finance, insurance, or real estate areas selected by the student with approval of the staff member supervising.

†7900-8900. Research Practicum in Finance, Insurance, and Real Estate for Graduate Students.

(1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of finance, insurance, and real estate. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

†7901-8901. Teaching Practicum in Finance, Insurance, and Real Estate for Graduate Students. (1-6). Practical demonstrations of and experience in the art of teaching finance, insurance, and real estate topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

†7902-8902. Workshop in Finance, Insurance, and Real Estate for Graduate Students. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in finance, insurance, and real estate. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

†7996. Thesis. (1-6). Candidates desiring to write a thesis must fill out an application on the approved form after consulting with the major professor. The application must be filed with the Dean of Graduate Studies.

8820. Theory and Practice of Financial Management. (3). Study of the more recent advanced literature of managerial finance and its applications. Intensive pursuit of approved individual topics. Oral presentations of research papers and cases. PREREQUISITE: FIR 8810.

8830. Capital Markets and Institutions. (3). Application of the theory of finance to the analysis of existing financial markets and institutions. Emphasis on the structure of the market for corporate capital instruments and the effect of capital market movements on financial decisions.

8850. Seminar in Finance. (3). Emphasis on current issues in private sector finance. Designed to encourage students in finance to develop a firm understanding of the important theoretical and empirical contributions to the literature. Course will draw on readings and the research projects of individual students.

† Grades of S, U, or IP will be given.

MANAGEMENT

THOMAS R. MILLER, Ph.D., *Chair
Room 202, Fogelman Business and
Economics Building*

PETER S. DAVIS, Ph.D.,
Coordinator of Doctoral Program

V. CAROL DANEHOWER, D.B.A., Ph.D.,
Coordinator of Master's Program

terpersonal relationships. Nature of operations management.

7130. Seminar in Organizations. (3). Micro and macro examination of factors affecting behavior within organizations; motivation, leadership, group dynamics, organizational design and development, and conflict management; consideration of behavior, structure and processes of organizations. **PREREQUISITE:** MGMT 7030.

7160. Seminar in Business Policy. (3). (7410). The development of the top management viewpoint, the basic objective being to develop executive abilities and creative thinking. Selected problem areas of modern business will be explored. Alternative courses of action appraised, and decision-making ability developed. **PREREQUISITE:** 15 semester hours of CORE II courses.

7170. International Management. (3). Foreign operations of American firms, impact of foreign competition on the domestic market, and management of multinational enterprises; identification, analysis, and resolution of managerial issues in multinational business operations. **PREREQUISITE:** MGMT 7030.

7173-8173 Executive Communications (ADOS 7173-8173). (3). Theory of communication essential to management with written, oral, and interpersonal applications; use of case problems to develop effective, efficient, and ethical communication strategies; impact of communication technology; intercultural communication; collection, analysis, and organization of primary and secondary data, followed by written and oral presentations.

7210-8210. Seminar in Industrial Relations. (3). An in-depth examination of selected problems in labor management relations. Emphasis on an understanding of past practices as well as current trends which relate to present day activities in industrial relations. **PREREQUISITE:** MGMT 7030.

7220-8220. Seminar in Human Resources Administration. (3). Problems and issues deriving from movements and trends in the management of human resources caused by changing laws, union activities, and the demands of our culture. The student is required to select one or more recent concepts or problems for intensive study and critical analysis. **PREREQUISITE:** MGMT 7030.

7230-8230. Collective Bargaining and Labor Arbitration. (3). Advanced analysis of labor law and collective bargaining theory on which labor arbitration is based. Legal status and strategy and tactics of labor arbitration. **PREREQUISITE:** MGMT 7030.

7240-8240. Seminar in Human Resource Management and Careers. (3). Research theories of career stages, career and adult life transitions, work and family conflicts, and managing diverse work force; international human resource issues and career issues. **PREREQUISITE:** MGMT 7030.

7260-8260. Seminar in Job Analysis, Selection and Performance Appraisal. (3). Concepts and issues concerning understanding of jobs and performance of jobs; job analysis which creates foundation for selection and performance, use of job requirements for developing selection criteria and performance standards. **PREREQUISITE:** MGMT 7030.

7421-8421. Seminar in Organizational Behavior I. (3). Individual and group behavior within our organizations. Emphasis is placed on the study of behavior science concepts and research and their applications to the management of organizations. Individual studies will be pursued with group analysis and discussion at regular class meetings. **PREREQUISITE:** MGMT 7030.

7422-8422. Seminar in Organizational Theory. (3). Major historical and contemporary theories of organizational structure, principles, techniques, and processes as they relate to the management of organizations. Individual studies will be pursued with group analysis and discussion at regular class meetings. **PREREQUISITE:** MGMT 7030.

7423-8423. Seminar in Organizational Behavior II. (3). Employee-organization linkages, theories of human stress and cognition in organizations; cognitive

processes in organizational contexts including social cognition, commitment, self regulation, intrinsic-extrinsic rewards, coping with stressful organizational and life events, and determinants of pro-social behavior in work contexts. **PREREQUISITE:** MGMT 7030.

7500-8500. Seminar in Strategic Management. (3). Literature of strategic management; contributions of other fields to strategic management included. **PREREQUISITE:** MGMT 7030.

7504-8504. Seminar in International Business Strategy. (3). Nature and economic role of multinational corporation including impact of legal, political, educational, sociological, and cultural variables upon performance and managerial activity of multinational firm. **PREREQUISITE:** MGMT 7160.

7506-8506. Seminar in Industry and Competitive Analysis. (3). Competitive environment of business organizations; emphasis on understanding industry structure and the positioning of firms in relation to major rivals. **PREREQUISITE:** MGMT 7160.

7508-8508. Seminar in Corporate Strategy. (3). Research literature on corporate-level strategy topics; corporate strategy as well as decision and implementation processes and problems; strategic issues of multibusiness firms. **PREREQUISITE:** MGMT 7160.

7510-8510. Seminar in Strategy and Planning Research. (3). Specialized areas in strategic management review of relevant literature, and methodology determined; emphasis on problem determination and analysis and preparation of comprehensive reports and research proposals. **PREREQUISITE:** MGMT 7160.

7520-8520. Seminar in Organizational Change and Development. (3). Diagnosis of problems reducing organizational effectiveness and the techniques for introducing and implementing change in organizations. The theoretical basis of organizational development and the rationale for organizational development. **PREREQUISITE:** MGMT 7030.

7530-8530. Seminar in the Development of Management Thought. (3). Historical evolution of management thought designed to enable students to acquire a mastery of the literature in the field. Emphasis on the work of pioneers and major contributions to the development of the discipline of management. **PREREQUISITE:** MGMT 7030.

7900-8900. Research Practicum in Management for Graduate Students. (1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of management. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

17901-8901. Teaching Practicum in Management for Graduate Students. (1-6). Practical demonstration of and experience in the art of teaching management topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

-7902-8902. Workshop in Management for Graduate Students. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in management. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7910-8910. Problems in Management. (1-6). Directed independent research projects in an area selected by the student with approval of the staff member supervising. **PREREQUISITE:** Permission of department chair.

7921-8921. Seminar in Management Research. (3). Some of the statistical techniques available to the business researcher. Topics include: contingency tables, bivariate correlation analysis, regression analysis, ANOVA, discriminant analysis, and factor analysis. Use of computerized statistical packages and interpretation of the results of these packages. **PREREQUISITE:** ISDS 2711 or 7020 or equivalent.

17996. Thesis. (3-6). Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of Graduate Studies.

I. In the Department of Management, qualified students may work toward the Master of Science degree in Business Administration with a concentration in Management, the Master of Business Administration with a major in Business Administration and concentration in Management, or the Ph.D. in Business Administration with a concentration in Management.

II. **M.S. Degree in Business Administration with Concentration in Management**

A. *Program Admission:*

1. Satisfactory performance on the Graduate Management Admission Test (GMAT)

2. Satisfactory undergraduate grade point average

B. *Program Prerequisites:*

Core I prerequisites are summarized at the beginning of this College section.

C. *Program Requirements:*

1. Each candidate must complete a minimum of 33 semester hours of approved graduate courses. The 33 graduate credits include a minimum of 21 hours in the concentration 24 if a thesis is written), including MGMT 7130. The required core courses in the Management concentration include:

MGMT 7530 - Seminar in the Development of Management Thought

MGMT 7421 - Seminar in Organizational Behavior

MGMT 7500 - Seminar in Strategic Management

2. Three semester hours in a collateral area approved by the student's adviser (nine if thesis is written).

3. The 33 credit hours required must be in courses designated for graduate students 7000 level or above.

4. Must pass a comprehensive examination.

III. **M.B.A. Program**

See the beginning of this College section for admission, prerequisite, and program requirements. The management concentration consists of 9 hours of Management courses approved by the student's adviser.

IV. **Ph.D. Program**

See the beginning of the College section for admission, prerequisite, and program requirements.

Students are expected to be enrolled in the program on a full-time basis during their course work and one year during their dissertation stage. This commitment is expected to require three to four years of full time study. Course work should be completed within two to three years, depending upon a student's prior academic background.

In addition to these requirements Ph.D. students are expected to develop a high level of skills in both research and teaching. Doctoral students are provided ample opportunity to develop these skills through class work, seminars, and assistantships.

H550 MANAGEMENT (MGMT)

6410. Office Management. (3). (ADOS 6410). Modern methods of office organization and management, including office systems and procedures, office layout and design, and ergonomic considerations.

6460. Word Processing Management. (3). (ADOS 6420). Emphasizes concepts and development of managerial techniques in word processing. Includes word processing systems and procedures, equipment selection, layout and design of word processing departments, dictation systems, and human aspects of word processing systems.

7030. Management and Organization. (3). (7000). Comprehensive analysis of concepts and applications required for effective performance of the manager's job in organizations with varied environments. Management as a sub-function of the total organizational system interacting with objectives, planning and control, organizational design, and in-

8610. Seminar in Administrative Theory and Practice. (3). Critical appraisal of current theories in administration. Responsibilities, roles, values, and underlying assumptions involved in administration; the interaction of administrators, organizations and environments, and the process involved in administering complex organizational systems with multiple goals and programs in varied environments.

Office Employees; Office Supervision; Standards and Standardization; Quantity and Quality Control; Improving Procedures; Simplification; Office Forms; Measuring and Timing Office Work; Office Manuals; Office Costs and Budgets.

† Grades of S, U, or IP will be given.

MANAGEMENT INFORMATION SYSTEMS & DECISION SCIENCES

RONALD B. WILKES, Ph.D., *Chair*
Room 300, Fogelman Business and
Economics Building

RAVINDER NATH, Ph.D.
Coordinator of Doctoral Programs

WADE M. JACKSON, Ph.D.,
Coordinator of Master's Program

H554 BUSINESS EDUCATION (BUED)

7000-8000. Analysis of Research in Business Education. (3). Research techniques and findings as exhibited in representative investigations in business education. Emphasis on reading and interpreting research, research findings as implications for solving educational problems, and recognizing potential topics for needed future research. PREREQUISITES: EDRS 7521 and 7541.

7010-8010. Issues and Trends in Business Education. (3). Issues and trends in education that pertain to business as well as those issues and trends that are inherent in business education itself.

7030-8030. Curriculum Construction in Business Education. (3). Principles of curriculum construction applied to business education curriculum, including Federal, state, and local forces that influence business education curriculum. Includes: basic concepts, criteria to be considered in curriculum construction, method of conducting a curriculum study, and ongoing process of evaluating curriculum in business education. PREREQUISITE: CIED 7002 Fundamentals of Curriculum Development.

7620-8620. Organization and Supervision of Vocational Business Education. (3). Office occupations programs with special emphasis on types of curriculums, production laboratories, and cooperative programs. Classroom supervision, physical layout, administration of programs, and utilization of block time.

7640-8640. Improvement of Instruction in Bookkeeping and General Business Subjects. (2). A critical evaluation of content, visual aids, methods, and testing in bookkeeping and general business subjects.

7655-8655. Materials and Methods in Vocational Education. (3). Instructional media and aids relating to vocational office education with emphasis on recent developments and research. Particular emphasis is placed on individual instruction techniques for the block-time approach to office education programs.

7660-8660. Tests and Measurements in Business and Office Education. (3). Standardized and published tests in business education, new trends in testing, application of sound testing theory and techniques to business education with special emphasis on evaluation of skill development, the establishment of realistic office competencies, and the evolution of grading standards.

7670-8670. Seminar in Business Education. (3). Methods and techniques of evaluating significant research studies and other current business education and related literature. Evaluation of progress achieved and in conclusion of such literature to guide practical school use.

7720-8720. Guidance in Business and Office Education. (3). History, principles, and philosophy of guidance in business education; relationships of business teacher to school guidance services; special attention directed to the development, scope, and responsibilities for vocational guidance with respect to selection and retention of vocational students.

7910-8910. Problems in Business Education. (1-6). Directed independent research projects in area selected by student with approval of supervising faculty member. PREREQUISITE: Approval of supervisor and department chair.

H552 ADMINISTRATIVE OFFICE SYSTEMS (ADOS)

7420-8420. Problems in Office Management. (3). Problems in actuating office employees and controlling the work of the office. Topics: Motivating Office Personnel; Job Evaluation; Recruiting and Training

H557 MANAGEMENT INFORMATION SYSTEMS & DECISION SCIENCES (ISDS)

6780. Applied Software Development Project. Application of programming and systems development concepts, principles, and practices to a comprehensive systems development project. Team approach used to analyze, design, and document realistic systems of moderate complexity. Use of project control techniques, formal presentations, and group dynamics in development of information systems. Development of database to support system. PREREQUISITES: ISDS 3770, 3775.

6790. Management Information Systems. (3). A comprehensive view of the decision-maker's information requirements and the role of current information gathering means and methods. Problems and techniques concerning design and installation of responsive systems with special attention to executive use of system's products. Systems approach utilizing current planning and control models studied through current literature and texts in computer field. PREREQUISITE: ISDS 2750 and one college level mathematics course, or permission of the instructor.

7020. Statistical Methods in Business and Economics. (3). (MGMT 7011). Statistical concepts and methodology useful in understanding, assessing, and controlling operations of business and economic society. PREREQUISITE: 1312 or equivalent.

7050. Information Systems for Management Decisions. (3). Concepts of modern information systems, emphasis on integration of automated information processing within organizational structure and on computerized management tools for decision-making. PREREQUISITES: MATH 1211 or higher and permission of instructor.

7060. Program Development and File Structures. (3). Structured problem solving and development of structured programs using business programming language; internal and external data structures with emphasis on primary and secondary file structures. PREREQUISITE: ISDS 2750 or 7050.

7080. Principles of Production and Operations Management. (3). Role of P/OM function and relationship to other functional areas; basic production techniques and tools for both manufacturing and service operations. PREREQUISITE: ISDS 2711 or 7020.

7120. Quantitative Methods for Business Decisions. (3). (MGMT 7420). Applications of management science models for managerial control and research; concepts and techniques of research design integrated with linear programming, inventory, network and simulation models; computer solutions and managerial interpretation with regard to management science models, statistical techniques and information systems concepts. PREREQUISITES: ISDS 7020 and 7050 or equivalent.

7310-8310. Seminar in Production and Operations Management. (3). Problems and issues encountered in productions and operations management environment. Master planning, capacity management, resources planning, and shop floor management. Managerial decision making process for improving productivity and better utilization of scarce resources. Implementation problems and solutions. Manufacturing and service operations. PREREQUISITE: ISDS 3510 or equivalent or permission of instructor.

7311-8311. Seminar in Materials Planning and Management. (3). Traditional and modern theories and techniques of materials management. Organization for effective materials management systems. Requirements planning and resources planning. Design and implementation consideration, role of top management in materials planning and management. Functional interface problems and data base integrity. PREREQUISITE: ISDS 3510 or equivalent or permission of instructor.

7312-8312. Seminar in Manufacturing Resources Planning. (3). Multifunctional analysis of problems and issues encountered during planning of resources

I. In the Department of Management Information Systems and Decision Sciences, qualified students may work toward the Master of Science degree with a major in Business Administration and a concentration in Management Information Systems, a Master of Business Administration degree with a major in Business Administration and a concentration in Management Information Systems or Management Science and Operations Management, and the Ph.D. with a major in Business Administration and a concentration in Management Information Systems and Decision Sciences. The department offers courses in information systems, production operations, and quantitative methods.

II. M.S. in Business Administration Degree with Concentration in Management Information Systems Program

A. Program Admission

1. Satisfactory performance on the Graduate Management Admissions Test (GMAT).
2. Satisfactory undergraduate grade point average.

B. Program Prerequisites

In addition to Core I prerequisites summarized at the beginning of this College section, students should have completed all necessary prerequisites for the advanced coursework.

Additional departmental requirement is ISDS 7060, which must be completed before taking MIS concentration courses.

C. Program Requirements

1. Each candidate must complete a minimum of 33 semester hours of approved graduate courses. The 33 graduate credits include a minimum of 21 hours in the concentration (24 if a thesis is written).
2. ISDS 7605, Business Database Systems; 7610, Systems Analysis and Design; and 7640, Information Systems Management and Planning as part of their degree program. Other courses can be selected from ISDS courses as approved by the departmental adviser.
3. Three to six semester hours in a collateral area approved by the students adviser. This will include MGMT 7160 (Seminar in Business Policy) if an integrating business policy course has not been successfully completed.
4. At least 24 of the 33 credit hours required must be in courses designed primarily for graduate students (7000 level or above).
5. Must pass written examination.

III. M.B.A. Program

See the beginning of this College section for admission, prerequisite, and program requirements. MIS concentration students must take ISDS 7060 as a prerequisite course before starting their concentration course work. Electives in the concentration must be approved by the departmental adviser.

Management Science and Operations Management Concentration students should take their three electives from ISDS as approved by the departmental adviser.

IV. Ph.D. Program

See the beginning of this College section for admission, prerequisite, and program requirements.

in manufacturing and service operations. Emphasis on role of computer and automation in control of scheduling, cash flows, labor capacity planning, inventory, distribution, and resource requirements. Systems-based. PREREQUISITE: ISDS 3510 or equivalent or permission of instructor.

7313-8313. Managing Global Production Operations. (3). Technical and business factors affecting global operations; emphasis on operation systems management, methods for decision making and ongoing challenges necessary to meet the needs of dynamic world market place. PREREQUISITE: ISDS 7310/8310 or permission of instructor.

7425-8425. Deterministic Models for Management Science. (3). Deterministic models concerned with optimal allocation of limited resources among competing activities. Business applications of linear programming including duality and post-optimality analysis as well as branch-and-bound and network flow methods of integer linear programming. PREREQUISITE: ISDS 7120 or equivalent.

7430-8430. Advanced Quantitative Topics for Business Decisions. (3). Advanced study of management decision-making using various quantitative methods of analysis. Specialized applications of specific foundation courses in management science. PREREQUISITE: ISDS 7425 or 7450 or 7431.

7431-8431. Advanced Modeling of Business Applications. (3). The application of management science modeling across business disciplines through readings, case studies, and projects; computer modeling languages utilized. PREREQUISITES: ISDS 7120 and MATH 1312 or 2321.

7450-8450. Simulation and Analysis of Business Systems. (3). Methods and techniques of digital computer simulation of business systems utilizing knowledge of data processing, statistics, probability and operations research. Areas of applications include inventory systems, production, scheduling, and various other traffic systems that experience waiting-line problems. Topics include the methodology of construction computer simulation model, model validation and analysis of results, and a brief look at various simulation languages, such as GPSS and SIMSCRIPT. PREREQUISITES: ISDS 7120 and MATH 1312 or MATH 2321.

7465-8465. Information Systems in Organizations. (3). Fundamental Concepts of systems and organizations; roles, types and applications of information systems (IS) in organizations; basic IS skills, techniques and methodologies. PREREQUISITE: ISDS 7050.

7605-8605. Business Database Systems. (3). Management of database for effective support of management information systems. Topics include characteristics and design of schemas and subschemas for hierarchical, network, and relational data models. PREREQUISITE: ISDS 7060 or permission of instructor.

7610-8610. Systems Analysis and Design. (3). Comprehensive structured approach to application system development process; emphasis on requirements analysis, logical specifications, structured design and implementation of information systems. PREREQUISITE: ISDS 7465, 7605 (corequisite).

7615-8615. Data Communications Systems and Networks. (3). Introduction to concepts and terminology of data communication, network design, and distributed information systems. Topics include equipment, protocols and transmission, transmission alternatives, the communications environment, regulatory issues, and network pricing and management. PREREQUISITE: ISDS 7605 or permission of instructor.

7620-8620. Decision Support Systems and Expert Systems. (3). Application of information systems tools to problem solving and decision making; emphasis on developing and applying concepts and technologies of decision support systems and expert systems. PREREQUISITE: ISDS 7605, 7120.

7630. Information Systems Projects. (3). Development or evaluation or both of specialized software product; field studies to collect and analyze data pertinent to significant information systems issues. PREREQUISITE: ISDS 7610.

7640-8640. Information Systems Management and Planning. (3). Information systems planning and management for the corporated executive and information systems manager. Emphasis on information as a critical resource and its role in policy and long range planning. PREREQUISITE: ISDS 7465 or permission of instructor.

7650-8650. Global Information Technology and Systems Management. (3). Information technology's impact on globalizations of businesses; international IT environment; models and issues in international IS; planning and managing global systems; case studies and applications. PREREQUISITE: Permission of instructor.

7900-8900. Research Practicum in Management Information Systems for Graduate Students. (1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of management information systems. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7901-8901. Teaching Practicum in Management Information Systems for Graduate Students. (1-6). Practical demonstrations of and experience in the art of teaching management information systems topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7902-8902. Workshop in Management Information Systems for Graduate Students. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in management information systems. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7910-8910. Problems in Management Information Systems and Decision Sciences. (1-6). Directed independent research projects in an area selected by the student with approval of the staff member supervising. PREREQUISITE: Permission of department chair.

7921-8921. Seminar in Decision Sciences Research. (3). Some statistical techniques available to business researcher. Topics may include: contingency tables, bivariate correlation analysis, regression analysis, ANOVA, discriminant analysis, and factor analysis. Use of computerized statistical packages and interpretation of results of packages. PREREQUISITE: ISDS 2711 or 7020 or equivalent.

7996. Thesis. (3-6). Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of Graduate Studies.

8470-9. Topics In Management Science and Operations Management. (1-3). Advanced studies in decision sciences techniques as applied to solution of current operational problems in businesses. Topics change each semester as determined by relevant developments in decision sciences; consult the Schedule of Classes for current topic. (Maximum 9 hours credit). PREREQUISITE: Permission of instructor.

8540. Multivariate Analysis for Business Research. (3). Multivariate techniques available to the business researcher. Use of computerized statistical packages and their interpretation. PREREQUISITE: ISDS 7020 or equivalent and a working knowledge of statistical packages SPSS and BMD.

8700-9. Topics In Information Systems. (1-3). Indepth study of selected current topics in MIS and related areas. Topics change each semester as determined by relevant developments; consult Schedule of Classes for current topic. (Maximum of 9 hours credit). PREREQUISITE: Permission of instructor.

8710. Research Seminar In Information Systems I. (3). Scientific methodology of MIS research; MIS frameworks and theory of MIS and organization-critique and analyze foundational papers; indepth study of researchable topics. PREREQUISITE: Permission of instructor.

8720. Research Seminar In Information Systems II. (3). Development of a research proposal; critique and evaluation related to research and the proposal. PREREQUISITE: ISDS 8710 or permission of instructor.

Grades of S, U, or IP will be given.

MARKETING

EMIN BABAKUS, Ph.D., *Interim Chair
Room 302, Fogelman Business and
Economics Building*

GEORGE H. LUCAS, JR., Ph.D.,
Coordinator of Doctoral Program

GREGORY W. BOLLER, Ph.D.,
Coordinator of Master's Program

I. In the Department of Marketing, qualified students may wish toward the Master of Science degree in Business Administration, the Master of Business Administration with a major in Business Administration and a concentration in Marketing, or Ph.D. with a major in Business Administration and a concentration in Marketing.

II. M.S. Degree In Business Administration Program

A. See the beginning of this College Section for admission, prerequisite, and program requirements.

B. *Concentration in Marketing*

a. Each candidate must complete a minimum of 33 semester hours of approved graduate courses. The 33 graduate credits include a minimum of 21 hours in the concentration (24 if a thesis is written).

b. The following courses must be included in the core of the concentration:

MKTG 7140 - Strategic Marketing
MKTG 7213 - Research Methodology,
MKTG 7510 - Negotiation Strategies
MKTG 7511 - Market Driven Quality

c. Three semester hours in a collateral area approved by the student's adviser. This will include MGMT 7160 (Seminar in Business Policy) if an integrating business policy course has not been successfully completed.

d. At least 24 of the 33 credit hours required must be in courses designated primarily for graduate students (7000 level or above).

e. Must pass a written and/or oral examination.

III. M.B.A. Program

See the beginning of this College section for admission, prerequisite and program requirements.

IV. Ph.D. Program

See the beginning of this College section for admission, prerequisite and program requirements.

In addition to these requirements, the following are an integral part of the Ph.D. program with a concentration in Marketing.

1. *Foreign Language/Communication Skills:* Ph.D. students with a concentration in Marketing may select one of the following options to meet this requirement:

a. Demonstrate proficiency in a computer programming language, or complete satisfactorily (a grade B or better) one of the following: COMP 6001 - Computer Programming, COMP 6002 - Accelerated Computer Programming, or other courses as approved.

b. Demonstrate proficiency in a foreign language pertinent to the student's area of research interests.

c. Students whose native language is other than English should demonstrate proficiency in English with evidence beyond the TOEFL scores.

2. *Teaching:* Developing teaching skills is a major component of the Ph.D. program. In the course of the program, doctoral students are provided with a balanced teaching and research assistantship. Student evaluations as well as faculty input (by observing doctoral students teach) are used to assess teaching skills. If teaching skills are found inadequate, the Ph.D. candidate will be advised an appropriate course of action.

3. *GPA Requirement:* Marketing doctoral students are required to maintain a minimum of 3.50 GPA in the marketing courses.

H560 MARKETING (MKTG)

7060. Marketing Management. (3). For graduate students with undergraduate degrees in fields other than business administration. Marketing management as it relates to product, price, place, and promotional activities in both profit and nonprofit organizations; external environment as it affects marketing.

7140. Strategic Marketing. (3). Analytical approach to strategy formation as it relates to marketing management activities of business enterprise. Focus on development of strategic framework for decision-making for both domestic and global organizations. PREREQUISITE: MKTG 7060 or equivalent.

7170. Multinational Marketing Seminar. (3). Emphasis on the cross-cultural aspects of multinational marketing through case studies and individual research. The execution of marketing concepts and theories in different cultures and environments. Similarities and differences of applications and results. PREREQUISITE: MKTG 7060 or permission of department chair.

7213. Research Methodology. (3). Nature and scope of research philosophy and methods in business. Primary and secondary research procedures. Emphasis on the preparation and presentation of independent research findings and on utilization of multi-variate analysis techniques. Required for Marketing concentration students in MBA program. PREREQUISITE: MKTG 7060 or equivalent.

7230-39-8230-39. Special Topics In Marketing. (3). Special study of problems in marketing. Topics areas change each semester as determined by relevant developments in marketing. Course may be repeated once with a change in content. Current topic listed in *Schedule of Classes*. PREREQUISITE: MKTG 7060 or permission of department chair.

7270-8270. Strategic International Marketing. (3). Strategic decision-making in a global environment; strategic planning systems, including marketing in-

formation systems and analysis, leading to formulation of international marketing strategies. PREREQUISITE: MKTG 7170 or equivalent.

7510. Negotiation Strategies. (3). Application of negotiation strategies and tactics in a variety of business, non-profit, and political environments; emphasis on collaborative and competitive styles of negotiating. PREREQUISITE: MKTG 7060 or permission of department chair.

7511. Market Driven Quality. (3). Application of TQM principles and techniques in marketing operations; emphasis on measuring and analyzing quality from customer's perspective. PREREQUISITE: MKTG 7060 or permission of department chair.

†7900-8900. Research Practicum in Marketing for Graduate Students. (1-6). Practical demonstrations of and experience in the design, practice, and methodology of research in the field of marketing. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

†7901-8901. Teaching Practicum in Marketing for Graduate Students. (1-6). Practical demonstrations of and experience in the art of teaching marketing topics. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

†7902-8902. Workshop in Marketing for Graduate Students. (1-3). Presentations of research methods and scholarly work by faculty, graduate students, and visiting scholars in marketing. Required of all Ph.D. students and recommended for all graduate assistants. Credit not applicable to major. May be repeated.

7910-8910. Problems In Marketing. (1-6). Directed independent research projects in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Permission of department chair which should be obtained at least one month before start of semester.

†7996. Thesis. (3-6). Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of the Graduate School.

8215. Ethical Criticism of Marketing Science. (3). Ethical analyses and critiques of scientific writing; deconstructive strategies of reading; emphasis on literary and rhetorical tactics employed in presentation of marketing theory.

8216. Measurement and Structural Equation Modeling. (3). Theoretical and methodological issues in research design, measurement, and method; development of measures of marketing constructs and empirical assessment of measurement properties; model development and testing to expand marketing theory; LISREL methodology to test measurement and structural models. PREREQUISITE: MKTG 8215 and PSYC 8302 or equivalent.

8217. Theory Construction and Evaluation. (3). Analyses of development of theory in marketing and management; critiques of dominant paradigms; examination of tenets of philosophy of science as they to theory generation and testing.

8222. Advanced Marketing Management Thought. (3). State-of-the-art thought in marketing management; analyses of foundations of marketing management theory; emphasis on developing new research approaches to improve marketing practice.

8223. Advanced Consumer Behavior. (3). Survey of theoretic and methodological contributions of consumer behavior research in areas of human information processing, search for information, complex decision making, motivations, and attitudes; emphasis on tracing major research streams in the literature through examination of current journal articles; research paper required. PREREQUISITE: Permission of instructor.

† Grades of S, U, or IP will be given.

A UNIVERSITY IS A PLACE WHERE ANCIENT
TRADITION THRIVES ALONGSIDE THE MOST
REVOLUTIONARY OF IDEAS. PERHAPS AS NO OTHER
INSTITUTION, A UNIVERSITY IS SIMULTANEOUSLY
COMMITTED TO THE DAY BEFORE YESTERDAY AND THE
DAY AFTER TOMORROW.

— RONALD REAGAN,
ADDRESS TO THE OXFORD UNION SOCIETY

THE COLLEGE OF COMMUNICATION AND FINE ARTS

RICHARD R. RANTA, Ph.D.,
Dean

RAYMOND M. LYNCH, D.M.A.,
Director of Graduate Studies

GRADUATE ACADEMIC PROGRAMS

Department	Major	Concentration Within Major	Degree Offered
Art	Art	(1) Ceramics (2) Graphic Design (3) Interior Design (4) Painting (5) Printmaking/Photography (6) Sculpture	Master of Fine Arts (M.F.A.)
	Art History	(1) Egyptian Art and Archaeology (2) General Art History	Master of Arts (M.A.)
Journalism	Journalism	(1) General Journalism (2) Journalism Administration	Master of Arts (M.A.)
Music	Music	(1) Performance (2) Sacred Music (3) Music History (4) Orff-Schulwerk (5) Pedagogy (6) Music Education (7) Jazz and Studio Music	Master of Music (M.Mu.)
		(1) Composition (2) Performance (3) Sacred Music (4) Music Education	Doctor of Musical Arts (D.M.A.)
		Musicology	Doctor of Philosophy (Ph.D.)
Theater and Communication Arts	Communication	(1) Communication Studies (2) Radio-TV-Film Production (3) Theater	Master of Arts (M.A.)
	Theater		Master of Fine Arts (M.F.A.)

ART

ROBERT E. LEWIS, M.F.A., *Chair*
Room 201, Jones Hall

I. The Department of Art offers the Master of Arts degree with a major in Art History and concentrations in (1) Egyptian Art and Archaeology, and (2) General Art History; and the Master of Fine Arts with a major in Art, with concentrations in Ceramics, Graphic Design, Interior Design, Painting, Printmaking/Photography, and Sculpture. The Department of Art is fully accredited institutional member of the National Association of Schools of Art and Design.

II. M.A. Degree Program

A. Program Admission

1. Admission to the Graduate School.
2. For the concentration in General Art History, an undergraduate course in each of the major areas of art history is desirable: ancient, medieval, renaissance, baroque, and modern. For the concentration in Egyptian Art and Archaeology, and undergraduate major in Egyptology, art history, anthropology, history, classical studies, or archaeology is desirable. If, after evaluation of the student's transcript, the art history faculty perceives a deficiency in these areas, the student may be required to successfully complete courses that will not count toward the Master of Arts degree.
3. A letter of intent, explaining the applicant's motivation and objectives in pursuing a graduate degree in art history.
4. A sample of undergraduate writing, preferably in art history.
5. Two letters of recommendation, at least one of which should be from a college faculty member who knows the student well.

B. *Prerequisites for Admission to Degree Candidacy*
The student shall apply for admission to degree candidacy upon the completion of 15 semester hours of graduate work. All candidacy requirements listed below must be satisfied before registering for more than 15 hours of coursework at the graduate level. To be approved for admission for candidacy, the student shall have:

1. A grade point average of at least 3.0 on a 4.0 scale.
2. Removed all departmental prerequisite requirements.
3. A planned degree program which meets all departmental and graduate school requirements.
4. The qualifying examination in art history shall be successfully completed and identified deficiencies removed. For a concentration in General Art History, this test is an entry-level slide identification examination covering key monuments of Western art from ancient through modern times. For a concentration in Egyptian Art and Archaeology, this test is an essay examination based on a reading list obtainable from the graduate adviser.
5. Knowledge of an appropriate foreign language must be demonstrated by the student. Generally speaking, advanced studies in art history require proficiency in at least one foreign language, depending upon the area of concentration selected by the student. Foreign language proficiency must be demonstrated by successfully passing an examination administered by the Department of Art; this examination should be taken during the first year of graduate study. This examination is set up so that each student is given a standard amount of time to translate in writing with the aid of a dictionary selected passages from scholarly articles in the student's field. For a concentration in Egyptian Art and Archaeology, French or German is preferred.
6. The student must establish an overall history of satisfactory ratings in periodic review, a semi-annual evaluation of each student's general level of achievement by all area graduate faculty. Forms are available for perusal in the Art Department Office. Students with assistantships are required to take 12 hours each semester, 3 of which may be chosen from ART 7880 or 7881.

C. Program Requirements

1. A total of 30 semester hours including the thesis.
2. The completion of ART 6123 and 7130.
3. A minimum of 18 semester hours in art history (not including the required ART 6123, 7130 or any hours in ART 7996).
4. Twenty-one semester hours of 7000 level courses including no more than 3 credit hours for the thesis.
5. Up to 6 hours of elective credit outside the field of art history may be selected with the permission of the adviser.

6. The satisfactory completion of a comprehensive examination and an acceptable thesis, with presentation and defense.

III. M.F.A. Degree Program

A. Program Admission

1. *Portfolio.* Approval by the area graduate committee of the applicant's creative work as specified below:
 - a. Graphic Design. Original and/or printed works.
 - b. Interior Design, 20-30 slides of drawings, perspectives, renderings, plans, elevations, etc.
 - c. Ceramics, Painting, Printmaking/Photography, and Sculpture. 20-30 slides of work mainly in the applicant's concentration area plus some slides of drawings and optional other media. Include additional views of 3D pieces. Submission of original work might be requested.
2. *Letters of recommendation.* Letters from two persons familiar with the applicant's creative activity but who are not members of the area graduate committee. If applying for a teaching assistantship, each recommendation should contain reference to the applicant's teaching ability.
3. *Statement.* A brief, personal statement of professional ambitions, intended concentration area, other special creative interests, and outline of previous professional experience.
4. *Deadline.* Applications for any given semester including summer sessions are normally decided during the regular academic year (approximately November 30th for Spring semester and April 30th for Summer and Fall entrance). Late applications will be considered, however, if space and faculty are available.
5. *Address:* Send slides, work, letters of recommendation, A, and statement to:

Coordinator of Graduate Studies
Department of Art
The University of Memphis
Memphis, Tennessee 38152
6. *Conditional Admission.* The area graduate committee can award conditional admittance after reviewing the application with the provision that the student complete undergraduate prerequisites of otherwise correct deficiencies.
7. Students with assistantships are required to take 12 hours each semester, 3 of which may be chosen from ART 7880 or 7881.

B. Program Prerequisites

1. Previous education and experience. Normally admission to the graduate program will require an undergraduate major in the applicant's concentration area. (See concentration areas listed above.) A baccalaureate degree from an accredited institution is required with not less than 70 semester hours of art of which 12 hours should be in art history and 18 hours (24 hours for Graphic Design and Interior Design) must be in the concentration studio courses. Exceptions to the above requirements will be considered, however, when the portfolio and professional experience warrant it.

2. Transfer credit. Any applicant who holds an M.A. degree in studio art from another institution may receive credit for up to a maximum of 30 semester hours credit in art earned for that degree to apply toward the M.F.A. degree.

C. Prerequisites for Admission to Degree Candidacy

The student shall apply for admission to degree candidacy during the semester in which the student completes 30 hours of graduate work. To be approved for admission to candidacy, the student shall have:

1. A grade point average of at least 3.0 on a 4.0 scale.
2. Removed all departmental prerequisite requirements.
3. A planned degree program which meets all departmental and graduate school requirements.
4. The student must establish an overall history of satisfactory ratings in periodic review (a semi-annual evaluation of each student's general level of achievement by area graduate faculty).

D. Program Requirements

1. A total of 60 semester hours including a thesis of 6 semester hours in the student's area of concentration.
2. A total of 36 semester hours of studio art, excluding the thesis, with a minimum of 24 semester hours in the student's area of concentration.
3. Forty-two semester hours of 7000 level courses.
4. A total of 9 semester hours in art history.
5. A total of 9 semester hours of electives.
6. Students with a concentration in graphic design are required to take 12 semester hours of ART 7040, *Problems in Graphic Design: Methodology and Practice*.
7. Satisfactory grade on a written comprehensive examination, with follow-up oral examination at option of examining committee.
8. Thesis (exhibition) to be approved by a faculty committee with the member under whom thesis was prepared as chair. For graphic design candidates, a written thesis accompanied by appropriate visual documentation is required.

K020 ART (ART)

6010-19. Special Topics in Studio Art. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to a maximum of 9 hours when topic varies.

6020-29. Special Topics in Art Education. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to a maximum of 9 hours when topic varies.

6030-39. Special Topics in Art History. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to a maximum of 9 hours when topic varies.

6111. Art and Archaeology of Egypt. (3). Pre-dynastic to Late Period.

6112. Egyptian Art and Archaeology in the Old and Middle Kingdoms. (3). Art, architecture, and archaeology, 3000-1500 B.C.

6113. Egyptian Art and Archaeology in the New Kingdom and Late Period. (3). Art, architecture, and archaeology, 1500 B.C. to 642 A.D.

6121. Ancient Art of the Near East. (3). Architecture, sculpture, painting, and the minor arts in Mesopotamia, Anatolia, and Syria-Palestine.

6123. Greek Art. (3). Architecture, sculpture and painting from the Bronze Age to the end of the Hellenistic period.

6124. Roman Art. (3). Architecture, sculpture and painting from Etruscan Rome to the fall of the Empire.

6125. Art and Archaeology of Pompeii. (3). Pompeii's excavations, art, artifacts and architecture in reconstructing ancient Roman daily life.

6131. Early Christian and Byzantine Art. (3). The development of architecture, sculpture, and painting through the early medieval period, with emphasis on early Christian and Byzantine Art.

6134. Romanesque and Gothic Art. (3). The development of architecture, sculpture, and painting from the Carolingian (Proto-Romanesque) Period through the Gothic Period.

6141. Art of the Early Renaissance in Italy. (3). Survey of the architecture, sculpture and painting of Italy, 1300-1510.

6142. Northern Renaissance Art. (3). Fifteenth century art in Northern Europe with emphasis on panel painting, manuscript illumination and printmaking.

6143. Art of the High Renaissance in Italy. (3). Sixteenth century art in Italy, highlighting the works of Michelangelo, Raphael, Titian and the Mannerists.

6146. Baroque Art. (3). Historical study of the architecture, sculpture, and painting produced in Europe during the seventeenth century.

6151. Nineteenth-Century Art. (3). Art movements of the nineteenth century from Neo-Classicism to Impressionism.

6154. Modern Art. (3). Major art developments in European painting and sculpture from the 1890 s through World War II, including Fauvism, Cubism and Surrealism.

6156. Art Since 1945. (3). Major art movements and contemporary schools of criticism from World War II until present day. Major trends include Abstract Expressionism, Pop Art, and Earth Art.

6158. Modern Architecture. (3). 19th century styles, 20th century masters, contemporary developments in architecture, including historic preservation.

6162. Latin American Art. (3). Hispanic arts of the Americas from 1500 to the present, considered in relation to Iberian and Indian traditions.

6163. Pre-Columbian Art. (3). A survey of the ancient arts of Mexico, Central America, and South America from c. 1000 B.C. to European contact.

6166. Art of the United States. (3). (6167, 6168). American painting, sculpture, and art theory from Colonial period to 1945.

6181. Traditional Arts of Africa, Oceania, and North America. (3). Survey of arts created by Native Americans of U.S. and Canada, peoples of sub-Saharan Africa and Pacific islands, examined in relation to their cultural context and heritage.

6221. Graphic Design for Print Communications. (3). Practical problems in the areas of publication, information, corporate, and promotional design.

6222. Graphic Design for Video Communications. (3). Study and execution of graphics for television, incorporating computer animation and design for the video environment.

6223. Specialized Studies in Graphic Design. (3). Advanced instruction in either illustration, typography, and publication design, 3-dimensional design, corporate and promotional design, or electronic imaging. May be repeated to a maximum of 12 hours when topics vary.

6224. History of Graphic Design. (3). Cultural, theoretical, and stylistic aspects of major movements in field of graphic design in Europe and America from the Industrial Revolution to present.

6231. Professional Practices: Graphic Design. (3). Instruction by a graphic arts practitioner in one of the following professional settings: design and concept, copy preparation, advertising graphics, and commercial photography. May be repeated to maximum of 12 hours when topics vary.

6232. Visual Design Business Practices. (3). Introduction to current business, legal, and trade practices relating to the profession of graphic design.

6233. Design Practice Studio. (3). Faculty supervision on projects for institutional and corporate clients; development of publications, exhibits, signage and other graphics, and participation in professional design process from project inception to completion. May be repeated to a maximum of 12 hours with approval of the adviser.

6237. Interior Design Studio II. (3). Comprehensive assignment in commercial design including design development, space planning, building code requirements, and construction and specification documentation for barrier-free design studied through lectures and design assignments.

6238. Interior Design Studio III. (3). A continuation of ART 6237 with further advanced studio assignments in commercial interior design studied through lectures and design projects. PREREQUISITE: ART 6237 or permission of instructor.

6239. Interior Design Business Practices. (3). History and organization of interior design profession, study of business methods, and practices, and formulation of resume and design portfolio.

6240. Interior Design Internship. (3). Supervised apprenticeship in interior design industry. Placement requires approval of interior design faculty. PREREQUISITE: permission of instructor.

6321. Drawing and Painting I. (3). An advanced course in drawing and painting methods with emphasis on transparent watercolor.

6322. Drawing and Painting II. (3). A continuation of ART 6321 with attention given to various mixed media.

6331. Painting III. (3). Advanced problems in oil painting, presupposing that the student has mastered basic techniques and is ready for a more experimental approach to the subject.

6332. Painting IV. (3). A continuation of ART 6331 with emphasis on development of a personal style.

6341. Illustration. (3). Survey of many areas requiring services of an illustrator and including preparation of book, magazine, advertising, and television illustrations.

6351. Advanced Printmaking I. (3). Specialization in one or two printmaking media with emphasis on development of personal imagery and technical skills.

6352. Advanced Printmaking II. (3). Advanced work on one or two printmaking media with continued development of personal imagery and advanced technical skills.

6380. Museums in Society. (3). (Same as ANTH 6380). History of museums and how they function in society; development of major collections and roles of museums as centers of research, education, and interpreters of social values.

6381. Art Curatorial Techniques. (3). Concentrates on curatorial responsibilities and functions, receiving and shipping methods, registration, physical and environmental security, research, conservation, and a study of the art market and publications.

6382. Professional Practices in Museums. (3). (Same as ANTH 6382). Basic aspects of museum organization; roles of director and trustees; responsibilities of professional staff including registrars and curators; scope of museum education programs; presentations by museum professionals.

6384. Museum Internship. (3-6). Approved internship with cooperating museum or gallery, emphasizing curatorial program and/or operational duties. PREREQUISITES: Permission of the instructor and one of the following or the equivalent: ART 6380, 6381, 6382 or 6384. Repeatable for maximum of 6 hours.

6410. Art Education Independent Study. (1-3). Theoretical and pragmatic ideas relevant to teaching of art. May be repeated to a maximum of 6 hours.

6424. Fiber Art and Design I. (3). Fiber arts concepts explored through weaving, applique, basketry, and fabric printing/dyeing.

6425. Fiber Art and Design II. (3). Advanced fiber arts concepts explored through in-depth study of either weaving, applique, basketry, or fabric printing/dyeing processes. PREREQUISITE: ART 6424 or permission of instructor.

6511. Sculpture IV. (3). Advanced work in various sculptural media.

6512. Sculpture V. (3). A continuation of ART 6511 with emphasis on personal expression.

6521. Ceramics III. (3). Introduction to pottery-making, including hand forming and production processes using clay, plaster, and cements.

6522. Ceramics IV. (3). A continuation of ART 6521 offering further study in pottery-making and glazing, emphasis on design.

6621. Workshop In Art. (1-3). Specific art problems as they apply to individual student; emphasis on basic art concepts and creative experience.

6622. **Workshop In Art II.** (1-3). Continuation of ART 6621, providing study of problems appropriate to needs of individual student.

6641. **Study and Travel In Art.** (3 or 6). Travel to important art areas of the world with specialized study under direction of departmental faculty member. Research problem assigned and evaluated by major professor required.

6650. **Professional Art Practices.** (3). Development of skills needed for success as practicing professional artist, including portfolio preparation and presentation, marketing, contracts, copyrights, and alternative art careers.

6701. **Color Photography.** (3). Exploration of photographic perception in color. Survey of the history and aesthetics of color photography. Techniques of color photography with emphasis on color printing. PREREQUISITE: ART 2702 or ART 6002 or permission of instructor.

6702. **Photographic Materials and Processes.** (3). Primarily an advanced technical course exploring the creative potential in various contemporary photographic materials, processes and techniques. Emphasis is on aesthetic application of those materials and techniques. PREREQUISITE: ART 2702 or ART 6002 or permission of instructor.

6703. **Alternative Photographic Processes.** (3). Creative potential of archaic and non-traditional photographic processes such as Cyanotype, Gum Bichromate and Kwik-Print. PREREQUISITE: ART 2702 or permission of instructor.

6704. **Photographic Lighting.** (3). Advanced theory, technique, and equipment used by professional photographers for black and white and color. Emphasis on aesthetic application in actual practice. PREREQUISITE: ART 6701 or permission of instructor.

6721. **History of Photography.** (3). Cultural and aesthetic consideration of the photographic image; visual and technical developments from the mediums prehistory to 1945.

6722. **History and Criticism of Contemporary Photography.** (3). Historical and critical issues in photography since 1945.

710-19-8010-19. **Special Topics In Studio Art.** (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to maximum of 9 hours when topics vary.

7020-29-8020-29. **Special Topics In Art Education** (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to maximum of 9 hours when topics vary.

7030-39-8030-39. **Special Topics in Art History.** (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated to maximum of 9 hours when topics vary.

7040. **Problems In Graphic Design: Methodology and Practice** (3). Issues, theory, and methodology of graphic designers; research of assigned topic, class discussions, and studio projects. May be repeated for maximum of 12 hours when topics vary.

7110. **Advanced Individual Study In Art History.** (3). Historical periods of art history with emphasis on individual research. May be repeated for credit when topics vary. PREREQUISITE: permission of instructor.

7115. **Middle Egyptian I.** (3). Grammar and translation of hieroglyphs.

7116. **Middle Egyptian II.** (3). Readings in hieroglyphs. PREREQUISITE: ART 7115 or equivalent

7117. **Middle Egyptian Literature.** (3). Readings and translations of major literature of Ancient Egypt. PREREQUISITE: ART 7116 or equivalent.

7118. **Middle Egyptian Historical Texts.** (3). Readings and translations of ancient Egyptian works of history. PREREQUISITE: ART 6116 or equivalent.

7119. **Late Egyptian.** (3). Readings in literature and other texts. PREREQUISITE: ART 7116 or equivalent.

7120-8120. **Medieval Art.** (3-9). Selected areas or specific problems in Early Medieval, Romanesque or Gothic Art. May be repeated upon recommendation of adviser.

7121-8121. **Ancient Art.** (3-9). Selected areas or specific problems in Egyptian, Near Eastern, Greek, or Roman Art. May be repeated upon recommendation of adviser.

7125. **Egyptian Art and Archaeology.** (3). Topics and problems in Egyptian art and archaeology. May be repeated upon recommendation of adviser.

7130-8130. **Art History Methods and Professional Practice.** (3). History of the discipline along with current research methods. Students develop research presentations in oral and written formats.

7140-8140. **Renaissance Art.** (3-9). Selected areas or specific problems of Renaissance Art. May be repeated upon recommendation of adviser.

7150-8150. **Nineteenth Century Art.** (3-9). Selected areas of specific problems in Nineteenth Century Art. May be repeated upon recommendation of adviser.

7152-8152. **Twentieth Century Art.** (3-9). Selected areas or specific problems in Twentieth Century Art. May be repeated upon recommendation of adviser.

7165-8165. **American Art: Ancient to Modern.** (3-9). Selected areas or specific problems in Pre-Columbian, North American Indian, Spanish Colonial, or American Art. May be repeated upon recommendation of adviser.

7200-8200. **Photography Seminar.** (3). Self-assigned visual/conceptual photographic problem in which journal is kept; group critiques and some seminar activities. May be repeated for a maximum of 6 hours.

7201-8201. **Advanced Research Photography.** (3). Independent work and research in photography. May be repeated for a maximum of 9 hours. PREREQUISITE: Permission of instructor.

7330-8330. **Studies In Two-Dimensional Media.** (3-12). Exploration of an original visual arts idea in two-dimensional media. May be repeated several times depending upon recommendation of adviser.

7420. **Methods for K-12 Art Instruction.** (2). Instructional planning, implementation and evaluation applied to elementary and secondary school art programs.

7550-8550. **Studies In Three-Dimensional Media.** (3-12). Exploration of an original visual arts idea in three-dimensional media. May be repeated depending upon recommendation of adviser.

7640. **Studies In Computer Animation.** (3). Advanced techniques and principles of visual communication in the video animation format. PREREQUISITE: permission of instructor.

7660-8660. **Directed Individual Study.** (3-9). Individual investigation of special research problems or projects. May be repeated upon recommendation of adviser.

7710. **Independent Studies in Black and White Photography.** (3). Independent exploration of original black and white photographic art ideas and studio techniques. May be repeated for maximum of 6 hours upon recommendation of adviser.

7711. **Advanced Photography Seminar.** (3). (6711) Emphasis on finding a personal direction within the student's work, pursuing that direction and discussing it in class critiques. PREREQUISITE: ART 7003 or permission of instructor.

7712. **Photography Portfolio Seminar.** (3). (6712) Student must produce a book of photographs or portfolio (bound by student) which represents a coherent, in-depth picture statement. PREREQUISITE: ART 7711.

7770. **Studies In Mixed Media.** (3-12). Explorations of an original visual arts idea in mixed media. May be repeated upon recommendation of adviser.

7780-8880. **Teaching Art for Graduate Assistants** (1-3). Overview and practical demonstrations of the art of teaching Art. Required of all graduate teaching assistants. Credit not applicable to the major. May be repeated.

7781-8881. **Workshop In Art for Graduate Assistants** (1-3). Presentation of research methods and scholarly output by faculty, graduate students and visiting scholars. Credit not applicable to the major. May be repeated.

7796-8796. **Thesis.** (1-6). Preparation and defense of a thesis prepared under direction of major professor. Studio Art thesis requires an exhibition.

† Grades of S, U, or IP will be given.

JOURNALISM

DAN L. LATTIMORE, Ph.D., *Chair*
 Room 300 Meeman Journalism Building
 ELINOR K. GRUSIN,
Coordinator of Graduate Studies

I. The Department of Journalism offers the Master of Arts degree with a major in Journalism and concentrations in Journalism Administration and General Journalism.

II. M.A. Degree Program

Students in the M.A. program may take courses in advertising, journalism, and public relations in keeping with their needs and interests. This program is designed for those who anticipate completing doctoral programs, for practicing professionals, and for those who are planning career changes. Students should consult with the coordinator of graduate studies and with faculty advisers in designing individual curricula.

A. *Program Admission and Prerequisites*
 Applicants to the program are evaluated as they apply and may be admitted for the fall or spring semesters or for the summer session. The following are required of all applicants.

1. A grade-point average of at least 3.0 (A=4.0) in all course work. Admission with conditions may be granted in extenuating circumstances.
2. An undergraduate degree in journalism from an accredited postsecondary institution or another degree from an accredited institution plus significant professional experience in advertising, broadcasting, journalism, or public relations.

Candidates who fail to meet prerequisites may be admitted as special undergraduates or non-degree students and be required to complete undergraduate courses work to remedy their deficiencies.

3. An overall Grade Record Examination (GRE) score of 900 with a score of 500 on the Verbal component, or a score of 40 on the Miller's Analogies Test (MAT). Applicants with lower test scores will be required to retake their tests and submit satisfactory scores during their first semester of study.

4. A statement of 500 to 1000 words indicating the academic program for which the individual is applying and specifying his or her career goals.

B. Program Requirements

1. *Credit hours.* Students may complete their degrees with (a) a minimum of 30 hours of graduate credit including a thesis, or (b) a minimum of 33 hours of graduate credit including a professional project, or (c) a minimum of 36 hours of graduate credit. All options require a comprehensive examination covering four core courses and culminating presentations to three-person faculty committees. All courses taken for graduate credit must be approved by the graduate faculty of the department. Student work must be completed at a level of performance satisfactory to the graduate faculty. Course work taken outside the department (other than as specified in the Journalism Administration concentration) must be approved by the student's advisers.

Students with graduate credit earned at another institution may petition to have it applied toward their degree requirements at the University of Memphis. Such credit is not transferred automatically and must be approved by faculty in the student's concentration. A maximum of six semester hours earned at another regionally accredited university may be applied toward the master's degree requirements at The University of Memphis.

2. *Comprehensive Examination.* Students must satisfactorily complete comprehensive examinations covering the four common core courses of JOUR 7025, 7050, 7075, and 7100. This examination must be taken within 12 months of completion of the last of these courses.

3. *Master's Thesis.* Students who anticipate continuing with doctoral study should complete an independent research project culminating in a master's thesis. On completion of a thesis, a student will take an oral examination to assess the thesis and the student's broader awareness of theoretical and empirical issues in his or her field.

4. *Professional Projects.* Practicing professionals seeking master's degrees to enhance career progress may complete a professional project under the direction of faculty committees. On completion of a professional project, a student will take an oral examination that assesses the project and the student's broader awareness of theoretical and empirical issues in his or her field.

5. *Required Courses.* All students are required to complete a 12-hour core consisting of JOUR 7025, 7050, 7075, and 7100 plus additional course work approved

by the student's adviser to meet specified credit hour totals. Students who choose a concentration in Journalism Administration must complete a minimum of nine hours in the Fogelman College of Business and Economics approved by their academic advisers. No more than three hours in either JOUR 7700 or JOUR 7800, but not both, may be applied to the degree.

6. Each student is responsible for obtaining a copy of the *Master of Arts in Journalism Student Handbook* from the coordinator of graduate studies or the department office. The document answers most questions about the program.

K260 JOURNALISM (JOUR)

6120. Reporting Public Issues. (3). Analyzing and writing news reports about government, courts, energy, economy, taxes, education, environment, medicine, and science; emphasis on relationship between current issues and public's need to be informed; and on topics vital to large, urban society. PREREQUISITE: JOUR 3720 or 3625.

6214. Magazine Editing & Production. (3). (3214). Editing and production problems of magazines, emphasis on business, industrial, and home periodicals; headline and title writing; pictorial copy layout; staff organization; production processes. PREREQUISITE: JOUR 3720 or 3625.

6328. Strategic Advertising Campaigns. (3). Development of creative strategy and its execution to include layouts, audio tapes, slide shows, storyboards, and sales promotion application. NOTE: Offered only in spring semester. PREREQUISITES: JOUR 3322, 3324, 3345, 4327.

6440. Public Relations Campaigns. (3). Application of theory, research data, and problem-solving techniques in development of comprehensive public relations strategies. PREREQUISITE: JOUR 4420.

6655. Seminar in Electronic Media. (3). Issues and problems confronting electronic media; analysis of various professional, societal, and economic forces that affect broadcast journalism.

6702. Current Issues in Journalism. (3). Advanced study of recent, critical problems faced by the mass media with exploration of complexities that cause them.

6708. Journalism Professional Ethics. (3). Classical approaches to ethics presented with their application to day-to-day considerations a journalist must face in working with employers, local publics and a larger society that depends on a free and responsible press.

6710. Mass Media and New Technology. (3). Scope of developing technology in mass media including cable, satellites video recorders and discs, lasers, optical fiber, videotext, computers and similar communication advances. Industry considerations and effect of new technology on society.

6712. International Mass Media. (3). International communication, flow of news and propaganda, role in national development and international affairs; growth and impact of global journalism, television news, advertising and public relations; comparison of media systems.

6800-09. Special Topics In Journalism. (3). Intensive study of a single critical issue or current topic. Topics may vary. May be repeated for a maximum of six hours.

†7001-8001. Workshop in Journalism for Graduate Assistants (1-3). Presentation of research methods and scholarly work by faculty, graduate students, and visiting scholars. Required of all graduate assistants. Credit not applicable to the major. May be repeated.

7025. Law of Mass Communication. (3). Laws and regulations affecting mass media with attention to social and political forces that shape the law; exploration of First Amendment theories as well as the constitutional framework of the legal system; in-depth legal research in the student's selected area of interest.

7050. Modern Journalism Theories. (3). Key concepts and development of theories offered to explain operation and effects of mass communication media, multidiscipline overview of 20th century theories dealing with advertising, broadcasting, print and public relations messages, media and effects.

7075. Journalism Research Methods. (3). Familiarization with content analysis, survey research, data analysis, and field studies as practiced by reporters, editors, and public relations decision makers; Modern research techniques and class project using computer analysis. PREREQUISITE: Permission of instructor.

7100. Journalism Administration Methods. (3). Administration of advertising, news and public relations enterprises; systems analysis exploration of classic management principles in organization, assessment of environment, planning and strategy, budgeting, staffing, decision-making, and other functions in advertising, news, and public relations.

7200-09-8200-09. Special Topics in Journalism. (1-3). Topics are varied and announced in *Schedule of Classes*.

7300. Literature In Ad, PR, and News. (3). Scholarly publications, books, and periodicals in advertising, public relations and the news media; general review of literature in the field.

7340. Advanced Advertising Practices (3). Planning and design of advertising campaigns and tactics with primary emphasis on implementation.

7350. Advanced News Practices. (3). Recent research findings in news reporting, writing and editing principles; practical experience in preparing finished news reports suitable for publication or dissemination in professional-level mass medium.

7400-8400. Public Relations Principles and Issues. (3). Contemporary social trends, public relations roles and responsibilities, and applicable public relations theory.

7420-8420. Public Relations Programming and Production. (3). Design and implementation of public relations programs in response to contemporary issues.

7440-8440. Organizational Public Relations. (3). How organizations maintain rapport with their publics and the mass media by effectively communicating long-range goals.

7700-8700. Directed Individual Research. (3). Projects on non-thesis related topics of special interest to the student ending in a completed research article or report. PREREQUISITE: Permission of instructor.

7800-8800. Directed Individual Readings. (3). Preparation of literature review for master's thesis with extensive bodies of writing in topic areas. May be taken to prepare scholarly papers on subjects of individual interest. PREREQUISITE: Permission of instructor.

†7999. Thesis. (1-6).

8410. Public Relations Theory and Applications. Theoretical constructs drawn from communication, education, management, and social sciences and their application in public relations. PREREQUISITE: JOUR 7400 or permission of instructor.

† Grades of S, U, or IP will be given.

MUSIC

B. GLENN CHANDLER, Ph.D., *Chair*
Room 123B, Music Building
JOHN DAVID PETERSON, D.M.A.,
Coordinator of Graduate Studies

The Department of Music offers the Master of Music degree with a major in Music and concentrations in Performance, Sacred Music, Music History, Orff Schulwerk, Pedagogy, Music Education, and Jazz and Studio Music; the Doctor of Musical Arts degree with a major in Music and a concentration in Composition, Performance, Sacred Music, and Music Education; the Doctor of Philosophy degree with a major in Music and a concentration in Musicology; Regional Studies. The Education Specialist degree is also available through the College of Education with a concentration in Music Education.

The Department of Music is a member of the National Association of Schools of Music.

A. Prerequisites to graduate standing.

A baccalaureate degree in music or the equivalent is required before entrance to a master's program in music.

Graduate work in theory, history, or applied music may not be taken until any identified deficiencies in these areas are removed. Graduate proficiency examinations in music theory and music history are generally held on the two days preceding graduate registration for the fall, spring, and summer terms.

1. A satisfactory grade shall be made on the aural and written theory proficiency examinations. A comprehensive exam in theory, analysis, and ear-training (MUSC 6202) is recommended for graduate students who need review and preparation for graduate work in theory. A satisfactory grade in this course will satisfy the graduate entrance requirement in theory.

2. A satisfactory grade shall be made on the music history and literature proficiency examination. MUHL 3301 and 3302 (Survey of Music History) are recommended for graduate students in need of review and preparation for graduate work in history. Satisfactory grades in these courses will satisfy the graduate entrance requirement in history.

3. A successful audition (or acceptable compositions in various media for candidates who plan a major concentration in composition) shall be presented when applicable to the anticipated degree program.

4. Students taking courses in vocal pedagogy or vocal performance must satisfactorily pass the proficiency examination in Diction administered by the Voice Division. Unsatisfactory performance in this area will make immediate enrollment in the Diction course mandatory.

5. All entering students for whom English is not a native language are required to demonstrate competency in written and spoken English, and, if necessary, complete satisfactorily inquired through the level of ENGL 1101.

6. Evidence of writing skill is required for the Master of Music with a concentration in music history.

B. Prerequisites to Master's degree candidacy.

1. The program of the student's intended degree shall be planned.

2. The student shall declare a concentration area. Admission to graduate standing in the proposed major must be approved by the area chair.

3. A thesis topic shall be chosen and approved on those degree programs involving the thesis.

4. Evidence of keyboard proficiency is required of students taking courses in choral music education, composition, voice performance, and vocal pedagogy.

C. Prerequisites for graduation.

1. A student with a concentration in performance must successfully complete an audition for the public recital and shall perform that recital with distinction. Outstanding performers may be recommended for the Performer's Certificate by their major professor at the time the recital audition is held. Following a favorable recommendation of the audition committee the chair of the Department of Music will convene a panel of the applied music faculty to hear the recital and make a recommendation concerning the award.

2. A student of whom a thesis is required shall submit an acceptable thesis.

3. The comprehensive examination shall be taken and passed.

Complete details of this outline may be obtained by writing the Coordinator of Graduate Studies in Music, Department of Music.

4. Reading knowledge of one language, preferably German, for the Master of Music with a concentration in music history.

II. M.Mu. Degree Program

A. Core Requirements (10 Hours)

Style Periods in History (See Note 1)	MUHL 7401-7405	(3)
Theory (See Note 2)	MUHL 7182	(3)
Analytical Techniques	MUTC 7201	(3)
Theory I	MUTC 7202	
Theory II	MUTC 7202	
Bibliography and Research Methods	MUHL 7400	(3)
Large Graduate Ensemble	MUAP 7001	(1)

B. Program Requirements (See Note 3) (22-28 Hours)

1. Performance (See Note 4)		
Applied Music (individual lessons)	(14; 12 for voice)	
Recital, Lecture Recital, Composition Practicum, or Thesis		(3)
Large Graduate Ensemble	MUAP 7001	(1)
Music Electives		(6)
2. Sacred Music		
Applied Music (individual lessons in organ or voice)		(8)

Sacred Music Core	(9)
Recital	(2)
Large Graduate Ensemble	(1)
Electives	(3)
3. Music History	
Music History	(9)
Minor Concentration in Music	(6-2)
Thesis	MUHL 7999
Large Graduate Ensemble	MUAP 7001
4. Pedagogy	
Applied Music (individual lessons)	(6-8)
Pedagogical Area	(14-17)
Graduate Ensemble	(1)
5. Orff-Schulwerk	
Orff-Schulwerk Core	(12)
Graduate Ensemble (See Note 6)	(1)
Electives	(9)
6. Music Education (See Note 5)	
Applied Music (individual lessons)	(2)
Music Education Core	(9)
Large Graduate Ensemble	MUAP 7001
Music Education Electives	(5-6)
Electives	(6)
7. Jazz and Studio Music (See Note 7)	
CMUS 7801	(3-6)
CMUS 7010, 7260, 6102, 6502, 7101;	
MUTC 7502, MUSE 6512	(6)
Performance/Composition-Arranging	(6-8)
Recital/Practicum/Thesis	(3)
Jazz and Studio Music Electives	(5-10)

C. NOTES:

1. A satisfactory grade on the music history proficiency examination must be made before enrollment in a course in Style Periods in Music History. For graduate students in need of review, MUHL 3301 and 3302 are offered. These courses do not apply to the fulfillment of degree requirements.

2. A satisfactory grade on the aural and written theory proficiency examinations must be made before enrollment in one of the suggested graduate theory courses. For graduate students in need of review, MUTC 6202 is offered. While this course does not apply to the fulfillment of degree requirements, a satisfactory grade in this course will meet the graduate entrance requirement in music theory.

3. Specific program requirements are determined as a cooperative effort between the student and the Adviser of Record.

4. For students studying voice, a minimum of 6 undergraduate hours in each of the following languages is required: French, German, and Italian. In addition, a student must have 2 semesters of Song Repertory. Both the language and repertory requirements may be fulfilled while a student is in the Graduate School.

5. This program is designed for individuals holding a license in music. If a candidate is not licensed to teach music, all requirements for licensure must be met prior to admission to graduate study.

6. Students in Pedagogy studying piano may substitute an elective for one hour of graduate ensemble.

7. Students planning a concentration in Jazz and Studio Music must achieve a satisfactory grade on the proficiency examination administered by that division. Students showing deficiencies may be placed in appropriate undergraduate courses. Students planning to take applied instruction at the 7000 level must perform an audition of classical and jazz literature in several styles. Students planning to take jazz composition/arranging must submit tapes and scores of several works for various media.

8. Students with assistantships are required to take 12 hours each semester, three of which may be MUSE 7001-8001.

III. D.M.A. Degree Program

The program is structured to allow maximum flexibility in designing a program around each student's background and needs. While the distribution of hours is firm, program requirements are to be regarded as general rather than fixed. The student's preparation, experience, and stated goals are carefully evaluated before an individually selected course of study is prescribed.

Admission to the Graduate School allows a student to take courses at the graduate level. It does not in any way imply that a student is admitted to candidacy for an advanced degree.

A. Admission to the Post-Master's Program

The following items are requirements for admission:

1. *University Requirements.* All requirements for admission to the university, including official transcripts and an acceptable score on the Graduate Record Examination, must be met for a student to be admitted to graduate study in music. A student may substitute the Revised Music Subject Examination of the Graduate Record Examination for the quantitative portion of the exam if an acceptable score is 510. The university regulations for minimum total score still apply. Complete information may be found in the section on Admission to the Graduate School in this catalog.

2. *Master's Degree.* Students requesting admission to a doctoral program in music must (1) present a master's degree in an area of specialization which they intend to pursue or (2) provide the faculty with satisfactory evidence of potential for successful work in the intended area, through performance either in assigned courses or in examinations.

Students should have completed one of the following degrees or its equivalent:

- Master of Music
- Master of Music Education
- Master of Arts in Music History
- Master of Arts in Applied Music
- Master of Arts in Ethnomusicology (Southern Regional Studies)

3. *Qualifying Examinations.* All students applying to a post-Master's degree in music must take the qualifying examinations in music history and music theory. An entering student should have a good grasp of music theory relating to music from the eleventh century to the present, a thorough knowledge of historical styles, and an awareness of the relationship between music and its sociological and historical matrices.

The qualifying examinations are diagnostic and may be taken once only. On the basis of the best results, course work may be assigned which must be completed within the first year of graduate study.

4. All students in performance must perform an audition. Voice performance students must pass the vocal diction proficiency examination or take the undergraduate diction course. Students in composition must present a portfolio of compositions in different media. Students in Music Education must submit an essay. Students in Sacred Music must submit an essay, a portfolio of compositions, or perform an audition as is appropriate to their specialties. When all of these requirements have been met, a committee should be formed and a course of study devised.

5. Evidence of writing skill is required for the Ph.D. with a concentration in musicology.

B. Candidacy

1. *Prerequisites:* a) successful completion of 40 hours of coursework; b) bibliography requirement: master's level course or Bibliography and Research Methods (MUHL 7400); c) written comprehensives in music history and theory, an oral comprehensive in music theory, and a residency requirement of consecutive fall and spring semesters. The student should then file the candidacy forms and seek approval of the dissertation topic or the proposal for the recitals.

In addition, the D.M.A. degree requires one research proficiency area to be chosen from the following:

a. Foreign language (demonstrated equivalence of two semesters at the undergraduate level in the same language; the language must be approved by the student's doctoral committee);

b. Statistics (EDPR 7541-8541); or

c. Computer science (one semester of 7000-8000 level). Dissertation/Dissertation equivalent:

Music Education: A dissertation is required.

Performances: Three public recitals are required to satisfy the performance concentration. The last of the recitals must be a lecture recital on a topic selected by the candidate and approved by the committee. The material covered in the lecture-recital will also be submitted as a small research document. (Piano majors will be required to perform a chamber music recital and a standard concerto in addition to the three solo recitals. These requirements are part of the applied music hours.) *Composition:* A work of major proportions is required.

Sacred Music: The final project in Sacred Music may take different forms and should reflect the minor as well as the sacred music major. It may be a dissertation, recitals, lecture-recitals, compositions, or a combination.

Submission of the Dissertation: All regulations of the Graduate School regarding the mechanics and submission of dissertations apply with equal force to those in music. The research document for those in performance should be an exhaustive study of the material chosen. All degree recitals must be taped and a copy of the tape placed in the Music Library.

Final Examination: For students writing a dissertation, the final examination will consist of a defense of a dissertation before the dissertation committee. Other faculty may attend or be invited to participate.

For those in performance, the examination will be a defense of the literature performed, the research on the recital material, or other areas related to performance. The contents of the examination, the results, in writing, will be conveyed to the Coordinator of Graduate Studies by the major professor.

Graduation: The timetable and requirements for graduation are set by the Graduate School and published in the graduate catalog.

Post-Master's Assistantships: Study at the postmaster's level involves considerable sacrifice of time and often earning power to fulfill the requirement of most institutions that a full year must be spent in residence before a degree can be awarded. By awarding assistantships at the post-master's level, the Department of Music seeks to accomplish two purposes: first it is our intention to attract the very best combination of talent and scholarship available; and second, it is our wish to encourage as many talented, mature students as possible to continue learning by providing basic subsistence during the year of residence. Normally, therefore, stipends to postmaster's students will be for one year only. In exceptional cases, staffing or research needs may make an extension for a second year desirable.

D. Concentration Area Requirements

1. *Performance* (bass, bassoon, cello, clarinet, flute, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, voice) (63 hours)

In addition to the area of specialization, a minor area in music is required. Elective hours may be taken either in music or in other areas. Three public recitals are required to satisfy the performance concentration. The last of these must be a lecture recital on a topic selected by the candidate and approved by his committee. (Piano majors will be required to perform a chamber music recital (2) and a standard concerto in addition to the two solo recitals and the lecture-recital. (2) These hours will count as part of the applied music requirement. The material covered in this recital will be submitted also as a formal research document. Each of the recitals must be taped and a copy of the tape placed on file in the library.

Distribution of hours will normally be as follows:

	HOURS
Applied Music	24
Minor Area in music	16
Electives, to be chosen with the approval of the student's committee	
Recital	
1. Composition (60 hours)	
2. Composition (to include 3 hours of Composition Practicum)	21
Minor Area in music	18
Electives, to be chosen with the approval of the student's committee	
Dissertation*	9

*This will consist of a work of major proportions.

3. Sacred Music (60 hours)

MUSA 8801 Studies in Sacred music (topics to vary) (9)

Other courses in any of the following areas: (18)

Voice
Voice Pedagogy
Conducting
Choral Techniques
Organ
Sacred Music
Orff-Schulwerk
Music Minor (12)

Twelve hours in one area of music which is not part of the sacred music core, to be chosen in consultation with student's committee.

Electives (12)

To be chosen in consultation with the student's committee

Final Project (9)

The final project may take different forms and will reflect the minors as well as the sacred music major. It could be a dissertation, recitals, lecture-recitals, compositions, or a combination.

4. Music Education (60-62 hours)

Music Education - 12 hours
Music History - 6 hours
Music Theory - 6 hours
Professional Education - 6 hours
EDPR 7523-8523 Statistical Methods - 3 hours
Elective - 3 hours

Applied Music - 4 hours (individual study)

Ensemble - 2 hours

General Electives - 14-16 hours (to be chosen in consultation with the student's committee)

Dissertation - 10 hours

IV. Ph.D. Program—Musicology (60 hours)

Students will follow either:

(a) a program providing a broad background in historical musicology culminating in a dissertation on a musicological topic agreed upon by the student and the doctoral committee.

A minimum of eleven courses (33 hours) in the major area, including:

MUHL 7400/8400 Bibliography and Research Methods

MUHL 8531 Early Musical Notations

MUHL 8505 Seminar in Musicology

Six courses (18 hours) in an approved academic minor other than music.

MUHL 8999 Dissertation

OR

(b) a program providing a broad background ethnomusicology.

A minimum of eleven courses in the major area—33 hours

MUHL 6801 American Folk and Popular Music 3

MUHL 7400/8400 Bibliography and Research

Methods

MUHL 7900/8800 Field Methods in

Ethnomusicology 3

MUHL 8801 Ethnomusicology Theory 3

MUHL 8805 Transcription and Analysis in

Ethnomusicology 3

MUHL 8806 Seminar in Southern Regional

Music 3

Three of the remaining five courses in music shall have a major focus on Southern regional music. 18

Six courses in an approved academic minor area or areas other than music 18

Dissertation (MUHL 8999) 9

General Requirements

1. Specialized courses in music and appropriate related disciplines that support the student's research interest will be included.

2. In special cases with the approval of a student's committee, no more than 9 hours in areas of music, outside Musicology, may be counted toward the fulfillment of the required 18 hours in a minor area or areas.

3. A reading knowledge of two foreign languages (for historical musicology, German and one other; for ethnomusicology, two of the following: French, German, or Spanish) must be demonstrated prior to degree candidacy.

4. The Music Department's master's level proficiency examinations in music theory and history shall be the minimum criteria for doctoral status in the Ph.D. program in Musicology: Regional Studies. Students needing additional work must successfully complete MUTC 5202 for theory and/or MUHL 3301, and/or 3302 for history.

5. For students in ethnomusicology, proficiency requirements in music theory and music history may be waived if the student's research is continuing in a historical or sociological direction. A petition to this end must be initiated by the student, endorsed by the doctoral committee, and approved by the graduate music faculty before the student has completed 15 hours of study.

6. Students with assistantships are required to take 12 hours each semester, 3 of which may be MUSE 801.

K320 COMMERCIAL MUSIC (CMUS)

6102. Composer's Workshop: Jazz/Commercial. (3). Composition in musical styles for various sizes of instrumental and vocal groups, writing for commercials, arranging, recording studio techniques. PREREQUISITE: CMUS 2502. (Offered spring semester of odd year.)

6103. Jazz and Studio Ensemble Techniques. (3). Jazz and studio performance styles, emphasizing arranging, ensemble technique, articulation, phrasing, recording studio techniques, and conducting. (Offered fall semester.)

6260-69. Special Topics In Commercial Music. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated with change of topics.

6502. Introduction to Film Scoring and Editing. (3). Basic problems of writing music for film; commercials, shorts, and full length productions; selection of appropriate styles; introduction to editing room equipment; assignments for 16 MM and 35 MM film; writing from a cue sheet. PREREQUISITE: CMUS 2502 or permission of instructor. (Offered spring semester of even year.)

6602. Legal and Business Practices of the Recording Industry I. (3). Structure, organizations, and business relationships which comprise commercial music industry; intellectual property rights, publishing, copyright, licensing, contracts, royalties, labor relations, and related business practices. PREREQUISITE: permission of instructor. (Offered fall semester.)

6603. Legal and Business Practices of the Recording Industry II. (3). Continuation of CMUS 6602. Commercial music industry with lecturers and distinguished guests from the industry; individual project required. PREREQUISITE: CMUS 6602 or permission of the instructor. (Offered spring semester.)

7010. Advanced Improvisatory Practices and Materials. (3). Advanced improvisational techniques, including motivic development, pan-diatonic, pan-chromatic, and free improvisation; practices involving pentatonic, quartal, cluster, and polychordal compositions, survey and analysis of published improvisation teaching materials. PREREQUISITE: Two semesters (or equivalent) of undergraduate improvisation, permission of instructor.

7101. Jazz Program Administration. (3). Basic administration of a college level jazz program; course and curriculum development/design, scheduling/planning, material acquisition, basic equipment needs, budgeting and budget administration, concert and festival planning/programming/production. PREREQUISITE: Permission of instructor.

7260-69. Special Topics in Jazz Studies. (1-3). May be repeated with change of topic.

7699. Media Music Production Practicum. (3).

7801. Studies in Jazz and Commercial Music. (3). Directed individual or class study in selected areas chosen in consultation with instructor. May be repeated with change in topic for a maximum of 9 hours credit.

7999. Thesis: Jazz and Studio Music. (1-3).

K307 MUSIC THEORY AND COMPOSITION (MUTC)

6202. Seminar in Music Theory and Analysis. (3). Theory, counterpoint, and analysis of literature. Contrapuntal and harmonic techniques. Research; theoretical problems from a pedagogical point of view; writing in strict and free styles. Recommended as a review course for graduate students. May not be counted toward any degree program in music except the M.A. and Ph.D. in Musicology with permission of the major advisor. (Offered fall semester.)

6260-69. Special Topics in Theory and Composition. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated with a change in topic.

6501. Composition. (2 or 4). Composition in varied forms for large and small ensembles and solo instruments; analysis of contemporary works and practical application of techniques. May be repeated for additional credit. Composition is taught as applied music. Students receive the equivalent of one hour lesson per week. The fee for this instruction is \$60.00 per semester.

7101-8101. Pedagogy of Theory. (3). A practical course in classroom procedure. Demonstrations by students and instructor in teaching the rudiments, elementary and advanced theory, various styles of counterpoint, and ear training. Various theoretical systems. Bibliography.

7102-8102. Analytical Techniques. (3). Techniques of analysis of styles and structure of music from all periods of the history of music.

7201-8201. Theory I. (3). Analysis of style features of the music of the 11th century through the Baroque period.

7202-8202. Theory II. (3). Analysis of style features of the music of the Classic, Romantic, Impressionistic, and Contemporary periods.

7203-8203. Studies in Music Theory. (3). Independent investigation of a research procedure or directed reading in selected areas of music theory chosen with consultation of instructor. May be repeated for credit when topic varies. PREREQUISITE: Permission of instructor.

7204-8204. History of Music Theory. (3). Development of theoretical concepts of music found in treatises and textbooks, dating from 550 B.C. to 1937 A.D.

7260-69-8260-69. Special Topics in Theory and Composition. (1-3). Selected topics in theory or composition. May be repeated with change of topics.

7501-8501. Composition. (2, 3 or 6). Free composition in all forms. Applicants to this course are required to submit original works in various forms and media as proof of maturity and technical preparation for graduate work. The course may be repeated with the instructor's permission for successive semesters.

Composition is taught as applied music. Students receive the equivalent of two half-hour lessons per week. The fee for this instruction is \$70.

7502-8502. Electronic Compositional Techniques. (3). Emphasis on tape manipulation, synthesizer operation, and recording techniques in association with individual compositional projects. May be repeated for credit with permission of instructor. The fee for this instruction is \$70.

7503-8503. Composition for Non-Composition Majors. (2 or 4). Composition in varied forms for large and small ensembles and solo instruments; analysis of contemporary works and practical application of techniques. May be repeated with instructor's permission. The fee for this instruction is \$70.

†7599-8599. Composition Practicum. (3-6).

†7999. Thesis. (1-3).

†8999. Dissertation. (1-9).

† Grades of S, U, or IP will be given.

K304 MUSIC HISTORY AND LITERATURE (MUHL)

6001. Piano Repertory. (3). Survey of stringed keyboard repertory from Bach and his contemporaries to the present. Representative works analyzed in regard to historical, stylistic, formal and aesthetic features. (Offered fall semester.)

6002. Song Repertory I. (3). Survey of solo literature from Italian, British Isles, and German schools of song. (Offered alternate years.)

6003. Song Repertory II. (3). Survey of solo literature from French, Russian and Slavic, Scandinavian, and American schools of song. (Offered alternate years.)

6005. History and Literature of the Organ. (3). Literature for the organ and its effect on and interaction with organ design.

6006. Guitar Literature I. (3). Basic repertoire from the Medieval period through the Pre-Classical period.

6007. Guitar Literature II. (3). Basic repertoire from the Classical period to the present.

6260-69. Special Topics in Music History. (1-3). Selected topics in Music History. May be repeated with change in topic.

6407. The Opera and the Music Drama. (3). A survey of the opera before Richard Wagner; study of Wagner's music dramas and opera of his contemporaries; dramatic and musical significance of each phase of the development of the two forms. PREREQUISITE: Permission of the instructor.

6500. String Repertory. (3). Histories, texts, methods, periodicals, orchestral studies, and solo and ensemble literature.

6800. World Musical Styles. (3). Musical styles and the role of music performance in preliterate and folk societies throughout the world. (Offered spring semester.)

6801. American Folk and Popular Music. (3). Folk and popular elements in American music. The role of mass media, especially the phonograph record, in

utilizing and changing folk music. The historical development and interrelationships between various musical styles ranging from nineteenth century minstrelsy to the roots of rock and roll. Emphasis on southern Anglo-American and Afro-American folk and popular musical styles. (Offered fall semester.)

6804. Blues. (3). Stylistic development of blues music from its beginnings; relationships to African-American and American culture and history. Offered fall semester.

6805. History of Rock and Roll. (3). Stylistic origins and development of rock and roll music from its beginning to the present.

6806. History of Jazz. (3). Stylistic origins and development of jazz; interaction of jazz and Western classical music styles.

6807. Memphis Music. (3). Distinctive forms of folk and popular music in Memphis in the twentieth century; relationships to the history, culture, and social patterns of the city and mid-south region; folk music background, blues, jazz, country music, gospel music, and rock and roll emphasized. Offered spring semester.

7260-69-8260-69. Special Topics In Music History. (1-3). Selected topics in Music History. May be repeated with change of topic.

7401-7406 - 8401-8406. Style Periods in Music History. (3). Music and historical data from various periods of Western musical history.

7401-8401. Medieval Music.

7402-8402. Renaissance Music.

7403-8403. Baroque Music.

7404-8404. Classic Music.

7405-8405. 20th Century Music.

7406-8406. Nineteenth-Century Music.

7400-8400. Bibliography and Research Methods. (3). Survey of the fields of historical and systematic investigation in music with bibliographical studies and research analysis. Required of all students who intend to write a thesis.

7407-8407. Studies in Music History. (3). May be repeated for credit when topics vary. Topics may be selected from the following: Sonata History, Opera History; 19th Century Art Song; The Polyphonic Mass to 1800; Cantata History; Symphony History; Brahms Mozart; Bach; Beethoven, Debussy-Ravel Schoenberg-Stravinsky; Chamber Music.

7408-8408. Studies in Musicology. (1-3). Independent investigation of a research problem, or directed reading in selected areas of musicology chosen in consultation with the instructor. May be repeated for credit with change of topic. PREREQUISITE: Permission of the instructor.

7505-8505. Seminar in Musicology. (3). Seminars in selected areas of musicology. May be repeated when topic varies.

7531-8531. Early Musical Notations. (3). Examination of history of Western musical notations from the ninth through seventeenth centuries; transcription of medieval music from its original sources into modern notation, singing and playing renaissance and early baroque music from facsimiles of original manuscripts and prints.

7800-8800. Field Methods In Ethnomusicology. (3). An exploration of techniques for designing field research subjects and gathering information in the field. Special attention will be given to techniques and problems related to the study of southern musical traditions.

7802-8802. Seminar In Ethnomusicology. (3). Seminars in selected topics. May be repeated for credit when the topic varies.

7803-8803. Individual Research In Ethnomusicology. (3). Individual research on a selected topic under faculty supervision. May be repeated if the topic varies. Only 3 hours credit may be applied toward a master's degree and only 6 hours credit toward a doctoral degree.

7804-8804. Internship In Southern Regional Music. (3). Practical experience in the application of knowledge and skills learned through the study of Southern regional music. The student will do super-

vised work in an area of music production, presentation, administration, or education for a public agency or in the private sector. This course may be repeated with a different type of internship, but only 3 credit hours may be applied toward any degree. PREREQUISITE: 18 credit hours in Ethnomusicology or Southern Regional Music.

†7999. Thesis. (1-3).

8701. Ethnomusicology. (3). A survey of concepts, problems, and methods of research in the interpretation of music in different social groups. Emphasis will be placed on functional and popular music rather than art music, and on cultures other than Western European and North American.

8805. Transcription and Analysis in Ethnomusicology. (3). An examination of the problems and methods of transcribing and analyzing non-Western and traditional music; the uses and limitations of staff notation; alternative descriptive systems.

8806. Seminar in Southern Regional Music. (3). Major issues in the study of southern folk and popular music. Among the topics will be the relationship between Afro-American and Anglo-American styles and traditions, the relationships of these styles and traditions to African and European music, and the interplay of traditionalism and commercialism in southern music. PREREQUISITES: Completion of 18 graduate level credit hours in music, including MUHL 7400 and MUHL 6801.

†8999. Dissertation. (1-9).

† Grades of S, U, or IP will be given.

K316 SACRED MUSIC (MUSA)

6104. Sacred Music in History and Practice I. (3). Jewish and Christian sacred music, exploring origins of styles, traditions, and current practices. This course may NOT be used as part of Sacred Music core. (Offered fall semester of alternate year.)

6105. Sacred-Music in History and Practice II. (3). (Offered spring semester of alternate year.)

6106. Children's Choirs in the Church. (3). Organization and development of children's choir program; rehearsal techniques; literature; vocal development; recruiting; contemporary approaches. (Offered fall semester.)

6107. Service Playing for Organists. (3). Playing of hymns and accompaniments, adaptation of piano and orchestra accompaniments, basic improvisation. PREREQUISITE: Upper division standing in organ or permission of instructor. (Offered spring semester of alternate year.)

6260-69. Special Topics In Sacred Music. (1-3). Selected topics in Sacred Music. May be repeated with change of topic.

6801. Individual Studies in Sacred Music. (1-3). Directed individual study in selected areas of music chosen in consultation with instructor. May be repeated for credit with permission of department chair. Maximum of 9 hours credit allowed.

7001. Oratorio and Cantata. (3). A study of the larger musical forms of the Church with performances by performing majors. An analytical study of style in performance and in context with suggested use of instruments in addition to the organ. PREREQUISITE: Graduate standing in music.

7801-8801. Studies In Sacred Music. (1-3). Directed individual or class study in selected areas of music chosen in consultation with instructor. May be repeated for credit with permission of department chair. May be repeated for a maximum of 9 hours credit.

K313 MUSIC EDUCATION (MUSE)

6001. Orff-Schulwerk for Classroom Teachers. (3). Broad, practical introduction to use of Orff-Schulwerk approach to elementary music teaching. Development of performance leadership skills stressed. Not open to music majors.

6201. Individual Studies in the Teaching of Music. (1-3). Individual study of problems and opportunities faced by those who teach music in the schools; for classroom teachers, music teachers, supervisors, principals, and administrators. May be repeated for up to 6 hours credit.

6205. Marching Band Techniques. (2). Organizing and conducting the marching band; gridiron charting and marching procedures with a study of precision drill, formation, and pageantry. (Offered spring semester.)

6206. Music for Exceptional Children. (3). A review of the types of exceptional children and the implications for providing realistic musical activities in the classroom. Emphasis will be placed on the use of music as a tool in reaching non-musical goals such as language development, social adjustment, motor coordination, aural and visual perception. (Team-taught with Special Education). (Offered spring semester.)

6208. Band Literature. (3). History and evolution of wind instruments and wind instrument playing; history and development of the wind band and its literature, with general background material on the specific composers involved. (Offered spring semester.)

6209. Piano Tuning and Repair. (2). Basic techniques involved in piano tuning and adjustment. Some basic tools are required.

6260-69. Special Topics in Music Education. (1-3). Selected topics in Music Education. May be repeated when topic changes.

6501. Piano Pedagogy I. (3). Training teachers for beginning through intermediate level piano instruction; establishing strong artistic, musical, and technical foundations; supervised practice teaching. PREREQUISITE: Permission of instructor. (Offered fall semester.)

6503. Piano Pedagogy II. (3). Training teachers for advanced piano instruction; extensive readings from renowned artist-teachers and performers, development of ideation and memorization skills; observations and supervised practice teaching. PREREQUISITE: MUSE 6501 or permission of instructor. (Offered spring semester.)

6505. Principles of Accompanying. (3). Performance class involving practical study of instrumental and vocal standard repertory and problems of ensemble playing; encourages facility in sight-reading and the ability to assimilate music rapidly; score-reading, transposition, and figured-bass realization are introduced as skills necessary to well-rounded musicianship. PREREQUISITE: Permission of instructor. (Offered spring semester.)

6506. Introduction to Suzuki Talent Education for Strings. (3). Required of students who plan to serve as apprentice string teachers in the university Suzuki Talent Education program. Basic instruction in the Suzuki philosophy; participation with parents and children in Suzuki string classes.

6508. Principles of Suzuki Piano. (3). Suzuki philosophy as applied to the development of the child's abilities and the role of the teacher and the parent. Analysis of the technical and musical instruction of the beginning piano student. PREREQUISITE: Undergraduate upper-division piano proficiency. (Offered fall semester.)

6509. Suzuki Violin Literature and Techniques. (3). Literature and technique of Suzuki Violin School; fundamental technique, development of posture, tone, and listening ability in beginning students; analysis of pedagogical material. Required of students who plan to serve as apprentice teachers in the university Suzuki String Program. PREREQUISITE: MUSE 6506.

6510. Advanced Suzuki String Pedagogy. (3). Continuation of literature and technique taught in Suzuki Violin School; emphasis on development of advanced student; laboratory experience in the university Suzuki String Program. Required of students who plan to be apprentice teachers in the university Suzuki String Program. PREREQUISITE: MUSE 6509.

6511. Class Piano Pedagogy. (3). Survey of group instruction techniques in the teaching of beginning, intermediate, and early advanced piano. Emphasis on observation and practical application. For piano majors and/or prospective piano teacher. PREREQUISITE: Upper-division level in keyboard or permission of instructor, Basic Piano Pedagogy or equivalent recommended. (Offered spring semester.)

6512. Jazz Pedagogy for Music Educators. (3). Design and implementation of comprehensive jazz curriculum for secondary or college level; teaching methodology in all disciplines of jazz idiom. PREREQUISITE: advanced standing, permission of instructor.

6801. Teaching Music Comprehensively. (3). A methods course designed to bring music theory, history, literature, performance, composition, and analysis to bear on the teaching of music at any level—elementary, junior high, high school, college, and private studio.

6802. Level I Orff-Schulwerk. (1-3). Basic Orff-Schulwerk techniques including body movement, soprano recorder, percussion, vocal performance, improvisation, and arranging. PREREQUISITE: Graduate standing in Music.

6811. Orff-Schulwerk for Music Specialists. (3). Experiences in Orff-Schulwerk through singing, rhythmic training, movement, improvisation, and instruments. Open to music majors and specialists only.

†7001-8001. Workshop in Music for Graduate Assistants. (1-3). Overview and practical demonstrations of the art of teaching music. Required of all graduate assistants. Credit not applicable to a graduate degree in music. May be repeated.

7103. Level II Orff-Schulwerk. (1-3). (6803). Intermediate level Orff-Schulwerk techniques including modal harmonization, irregular rhythms, alto recorder, performance, and more extensive improvisation and arranging. PREREQUISITE: MUSE 6802 or the equivalent.

7104. Level III Orff-Schulwerk. (1-3). (6804). Advanced Orff-Schulwerk techniques including original compositions, complex form, movement and instrumental arrangements, tenor and bass recorder performance, and advanced improvisation. PREREQUISITE: MUSE 7103 or the equivalent.

7202-8202. Music In Early Childhood. (3). Experimental and traditional music activities and teaching strategies designed to integrate the world of formal and informal sound into the three to six-year old's life. Open to all College of Education majors.

7203-8203. Choral Literature and Techniques. (3). Survey of choral literature from Dunstable to the present, using scores, records, and class performance. Analysis of the scores in terms of style, form, and performance problems. Techniques of teaching and conducting unfamiliar styles.

7204-8204. Instrumental Literature and Techniques. (3). Specific and intensive research in each student's major instrument, covering (1) history of the instrument, (2) tests, methods and periodicals, (3) orchestral studies, (4) solo and ensemble literature, and (5) listening and performance.

7207-8207. Tests and Measurements In Music Education. (3). The investigation of evaluative tools in music education, formulation and utilization of measurement devices in music teaching and research.

7208-8208. Administration and Supervision of Music. (3). An integrating course which involves the administrative considerations basic to all facets of music education programs, K-12. Objectives, organization, staffing, financing, facilities, public relations.

Federal programs. Includes laboratory field experience.

7210-8210. Projects in Elementary Music Curriculum Development, Implementation and Supervision. (3). Individualized in-depth study of a selected area in elementary school music education. Topics may include curriculum, program planning and development, evaluation of current practices, exploration of new or related fields. PREREQUISITE: Permission of instructor.

7211-8211. Projects in Secondary Music Curriculum Development, Implementation and Supervision. (3). Individualized in-depth study of a selected area in secondary school music education, vocal or instrumental. Topics may include curriculum, program planning and development, evaluation of current practices, exploration of new or related fields. PREREQUISITE: Permission of instructor.

7213-8213. Orchestration for Orff Instrumentarium. (3). An analysis of techniques used to orchestrate for Orff instruments as done in Europe, Asia, North and South America; original orchestrations in the elemental Orff style. PREREQUISITE: MUSE 4803-6803 or permission of the instructor.

7214. Master Class In Orff-Schulwerk. (2). Advanced pedagogy based on Orff-Schulwerk principles, designed to train workshop clinicians. Training includes orchestration techniques, ontogenetic treatment of rhythm and melody, movement improvisation and recorder playing. PREREQUISITE: MUSE 4804-6804 or equivalent experience.

†7215. Internship in Orff-Schulwerk. (3). A laboratory experience for the student, with assignment to a local elementary school where he will work with an Orff-trained music specialist. The student will be asked to design a specific project capable of being completed in a semester's time. The project will be supervised and evaluated by a faculty member in the elementary music education department.

7260-69-8260-69. Special Topics in Music Education. (1-3). Selected topics in Music Education. May be repeated when topic changes.

7301. Choral Arranging. (3). Problems of arranging music for various choral groups: K-6, junior high, and senior high; 3- and 4- part women's and men's choruses; mixed choruses.

7402-8402. History and Philosophy of Music Education. (3). An examination of the historical and philosophical foundations which underline the curricula and instructional programs in music.

7403-8403. A Survey of Research In Music Education. (3). Designed to acquaint students with theoretical and practical field research; to refine writing skills; to hypothesize and to develop potential research problems.

7501-8501. Vocal Pedagogy I. (3). Processes in voice production, respiration, phonation, articulation, resonance. Psychological, physiological, and acoustical problems. Voice classification, quality, diction, breath support, breath control.

7502-8502. Vocal Pedagogy II. (3). A study of different approaches to the teaching of voice including the observation of faculty members instructing students. Assignment of students to each member of the class for supervised teaching. PREREQUISITE: MUSE 7501.

7504-8504. Suzuki Piano Literature and Technique I. (3). Analysis of the technique and musicianship to be taught to the Suzuki student in the first four volumes of the literature; particular emphasis on understanding the developmental process of achieving good tone, finger strength, hand position, and rhythmic and musical sense, both aural and written.

Supervised teaching practicum. PREREQUISITE: MUSE 6508 or permission of instructor.

7505-8505. Suzuki Piano Literature and Technique II. (3). Continuation of Techniques I to cover the advanced technique and understanding of musical styles required for the literature in Vol. 5 and 6 and supplementary material. Teaching with supervision of Suzuki Piano Coordinator. PREREQUISITE: MUSE 7504 or permission of instructor.

7506-8506. Projects In Suzuki Teaching. (3). Individually assigned projects involving teaching under supervision; application of the knowledge acquired in the classroom.

7507-8507. Brass Pedagogy. (3). Teaching of brass instruments to junior and senior high school students; materials and methods covering problems unique to brass.

7508-8508. Percussion Pedagogy. (3). Pedagogical and technical aspects of percussion instruments. Emphasis on analysis of performance problems to provide pedagogical insight, not technical proficiency, on all percussion instruments.

7509-8509. Woodwind Pedagogy. (3). Pedagogical and technical aspects of woodwind instruments; materials and methods for each woodwind instrument: embouchure, breathing, tone, production, intonation, dynamics, care and repair.

7511. Projects In Piano Pedagogy. (1-3). Individual projects designed to explore problems of teaching under supervision. May be repeated for credit when the topic varies. PREREQUISITE: permission of instructor.

†7999. Thesis. (1-3).

†8999. Dissertation. (1-9).

† Grades of S, U, or IP will be given.

K318 APPLIED MUSIC (MUAP)

6260-69. Special Topics in Applied Music. (1-3). Selected topics in Applied Music. May be repeated with change of topics.

6801. Individual Studies In Applied Music. (1-3). Directed individual instruction in an applied area not listed under the MUAP course prefix. May not exceed 6 hours credit.

7002. Chamber Music. (1).

***7101-7108. Large Graduate Ensembles.** (1).

7101. Wind Ensemble

7102. Orchestra

7103. University Singers

7104. Opera Chorus

7105. Oratorio Chorus

7106. Concert Band

7107. Jazz Ensemble

7108. Opera Workshop

***7201-7213. Small Graduate Ensembles.** (1).

7201. Brass Ensemble

7202. Jazz Combo

7203. Chamber Music for Pianists

7204. Percussion Ensemble

7205. Contemporary Chamber Players

7206. Orff Ensemble

7207. String Ensemble

7208. Cameraata Players

7209. Cameraata Singers

7210. Opera Solists

7211. Woodwind Ensemble

7212. Collegium Musicum

7213. Jazz Vocal Ensemble

*May be repeated for credit.

Instrument	Music education Majors, Applied Music Minors Applied Music Electives. No Recital Required 1-2 Hours Credit	Applied Music Majors Applied Music Minors, Applied Music Electives Recital Required 2-6 Hours Credit
Trumpet	6111	7111/8111
Cornett	6151	
Sackbut	6161	
Horn	6121	7121/8121
Trombone	6131	7131/8131
Tuba	6141	7141/8141
Piano	6311	7311/8311
Harpsichord	6321	7321/8321
Organ	6331	7331/8331
Percussion	6411	7411/8411
Violin	6511	7511/8511
Baroque Violin	6512	7512/8512
Viola	6521	7521/8521
Cello	6531	7531/8531
Bass	6541	7541/8541
Guitar	6551	7551/8551
Harp	6561	7561
Viola da Gamba	6571	7571
Voice	6611	7611/8611
Flute	6711	7711/8711
Oboe	6721	7721/8721
Clarinet	6731	7731/8731
Saxophone	6741	7741/8741
Bassoon	6751	7751/8751
Recorder	6761	

7099. Chamber Music Recital. (1).

7260-69-8260-69. **Special Topics in Applied Music. (1-3).** Selected topics in Applied Music. May be repeated with change of topic.

7620-8620. **Independent Study in Symphonic and Operatic Conducting. (3).** Detailed study of advanced conducting techniques including styles, mechanics, score reading and preparation, and rehearsal techniques and organization. Practical experience in orchestral and operatic conducting. May be repeated for credit. **PREREQUISITES:** MUAP 7701 and/or permission of instructor.

7622-8622. **Independent Project in Opera Direction. (3).** Actual staging or musical direction of an opera workshop or opera theatre production. May be repeated for credit. **PREREQUISITE:** MUAP 7623 and permission of instructor.

†7699-8699. **Production Practicum. (3-6).** Required of majors in Opera and Conducting and Opera Production and Directing.

7701-8701. **Advanced Conducting. (3).** Conducting the concert band, the symphony orchestra, and the chorus in the larger musical forms. Emphasis on interpretation. May be repeated for credit. **PREREQUISITE:** Permission of instructor. \$60.00 instruction and lab fee.

†7899-8899. **Lecture Recital. (3).** Student must be concurrently enrolled in an appropriate applied music course. All policies relating to dissertations are applicable to lecture recitals.

†7901-8901. **Lecture Recital Research. (1-3).** Preparation of research document from which material for lecture recital is to be drawn. Topics to be approved by major professor and appropriate division coordinators.

†7999-8999. **Recital. (1-3).** Student must be concurrently enrolled in an appropriate applied music course. **8002. Seminar in Performance Problems. (3).** The study of literature and material for the performances necessary to prepare for the qualifying examination. Preparation of the dissertation recitals. **PREREQUISITE:** Admission to curriculum in performance. May be repeated for credit.

† Grades of S, U, or IP will be given.

(INDIVIDUAL LESSONS)

FEES: See Chapter 3 of this bulletin. Fees are paid to the University at the office of the Business Manager.

CREDITS AND GRADES: A full hour lesson will be given all persons enrolled in graduate applied music, regardless of credit-hours awarded. Music Education majors, applied music minors, and applied music electives will be allowed to register for two hours of credit only. Applied majors may register for two to six hours of credit, as permitted. Grades are awarded in accordance with the jury system and have the same significance as in any other subject. All graduate applied music juries shall be scheduled for fifteen minutes.

REGISTRATION: Students will be scheduled for individual lessons at the same time and the same manner that they register for other courses.

Individual Lessons may be repeated for credit in subsequent semesters, but not for the purpose of improving the grade originally earned.

THEATRE AND COMMUNICATION ARTS

PROFESSOR JOHN J. MCFADDEN, *Chair*
Room 143, Theatre and Communication
Arts Building

MICHAEL M. OSBORN, Ph.D., *Coordinator of Graduate Studies*

I. The Department of Theatre and Communication Arts offers graduate programs leading to the Master of Arts Degree in Communication Studies, (2) Radio-TV-Film Production, (3) Theatre; and the Master of Fine Arts degree in Theatre. Within the M.F.A. degree in Theatre, training is available in directing and in design and technical production. Within the M.A. concentration in Theatre, areas of interest may include acting, directing, oral interpretation, design, theatre technology, theatre history, critical studies, and playwrighting.

The theatre programs are fully accredited by the National Association of Schools of Theatre.

II. M.A. Degree Program**A. Program Admission**

All students applying for admission to the Communication Studies or Radio-TV-Film concentrations in the M.A. degree program are required to submit Graduate Record Examination (GRE) verbal and quantitative scores. In addition to meeting university admission requirements, applicants must also meet separate departmental requirements. These can be obtained by contacting the coordinator of graduate studies.

B. Program Requirements

1. Successful completion of a minimum of 36 hours of graduate courses, or completion of a minimum of 30 hours of graduate credit including a thesis or practicum; 70% of the minimum must be at the 7000 level or above. Permission to pursue the thesis or practicum option must be obtained from the Departmental Graduate Studies Committee.

2. All students choosing the non-thesis option must complete 7993 or 7994, Special Problems, in their last semester.

3. All M.A. students must take the following core courses: 7321, Communication Theory, and 7350, Rhetorical Theory.

4. Students with a concentration in Radio-TV-Film Production must take at least 3 credits of 6892 Film and Video Production, and may be required by their Advisory Committee to complete 7995, Production Practicum.

5. Students with a concentration in Theatre must take the following courses: 7521, Stage Direction; 7564, Principles of Scenography; 7581, Seminar in Dramatic Theory and Criticism; and 7582, Analysis of Dramatic Literature. The student must establish an overall history of satisfactory evaluation in periodic review. An annual evaluation of each student's academic progress and participation in the theatre production program is given by the theatre faculty in group session.

6. Up to nine hours outside the department may be applied to the minimum hour requirement with the approval of the student's advisory committee.

7. The student must pass written and oral comprehensive examinations administered and evaluated by the student's advisory committee.

8. Students with assistantships are required to take 12 hours each semester, 3 of which may be selected from COMM 7001, 7002, 7003.

III. M.F.A. Degree Program**A. Program Admission**

In addition to meeting University admission requirements, the applicant must also meet MFA Theatre Faculty academic and artistic standards. Contact Director of Theatre for Departmental Application Form.

1. An overall undergraduate grade point average of at least 2.5 from an accredited undergraduate institution.

2. A grade point average of at least 3.0 in the undergraduate major.

3. Acceptable scores on the Graduate Record Examination or the Miller Analogies Test.

B. Program Requirements

1. Successful completion of a minimum of 60 semester hours of graduate credit, of which no more than 18 may be at the 6000 level.

2. All students in the program must take the following core courses: THEA 7521, Stage Direction; 7564 Principles of Scenography; 7581, Seminar in Dramatic Theory and Criticism; and 7582, Analysis of Dramatic Literature. The student must establish an overall history of satisfactory evaluation in periodic review. An annual evaluation of each student's academic progress and participation in the theatre production program is given by the theatre faculty in group session.

3. Satisfactory completion of a major artistic production practicum.

4. Completion of an advisory committee approved internship in a professional setting: THEA 7600.

5. Satisfactory performance on written and oral comprehensive examinations as administered by the student's committee.

6. Students with assistantships are required to take 12 hours each semester, 3 of which may be selected from COMM 7001, 7002, 7003.

C. Admission to Candidacy

The student may apply for admission to the M.F.A. degree candidacy upon successful completion of 18 semester hours. To be approved for admission to candidacy the student shall have:

1. Completed all remedial work required by the advisory committee.

2. Demonstrated an acceptable level of competence through a qualifying artistic project approved by the

student's advisory committee.

3. Filled a Plan of Study which meets all departmental and graduate school requirements.

IV. Program Procedures for M.A. and M.F.A. Degree A. Initial Advising

Before enrolling as a major in any graduate course, the student must meet with the coordinator of graduate studies and with the director of Theatre or director of Communication Studies (depending upon area in which degree is desired). These interviews will determine initial registration, the general direction of the student's program, and the kind of remedial work which may be required.

B. Advisory Committee

Before nine weeks of the first semester have been completed, or before completing nine hours in a part-time program, the student's advisory committee will hold its initial meeting. The committee must include three members of the graduate faculty, one of whom is designated as chair. The committee shall have four major functions:

1. To complete and approve the Plan of Study which determines the student's concentration area. This will normally be the major business of the first meeting.
2. To review academic progress, and, after the completion of 15 hours or two semesters of part-time graduate work, to determine whether the student may continue in the program.
3. To approve a request to elect the thesis option (M.A./M.F.A.). The student should submit a thesis/practicum proposal to the committee according to the specifications provided by the department.
4. To administer comprehensive examinations.

K493 COMMUNICATION (COMM)

6011. Communication in Organizations. (3). Communication systems and problems in contemporary organizations with emphasis on the role of communication in corporate culture and in organizational change.

6013. Communication In Political Campaigning. (3). Forms and effects of communication between politicians and constituencies with emphasis on campaign rhetoric via the mass media, debates, model speeches, etc.

6210-19. Special Topics in Communication Studies. (1-3). Topics are varied and announced in Schedule of Classes. May be repeated for maximum of 9 hours when topic varies.

6220-29. Special Topics in Film. (1-3). Topics are varied and announced in Schedule of Classes. May be repeated for maximum of 9 hours when topic varies.

6341. Interpersonal Communication. (3). Theory and research regarding one-on-one communication; effective practices for various interpersonal settings.

6342. Small Group Communication. (3). Advanced study of group communication theory emphasizing group membership, member perceptions, group development, group process, and group outcomes.

6360. History and Criticism of Public Address. (3). Survey and analysis of speeches and speakers vital to social, political, and cultural movements in Western Civilization. Subjects may be drawn from ancient to contemporary times. May be repeated for maximum of 6 hours.

6373. Interracial Communication. (3). The social problems encountered in communication between blacks and whites. Readings, discussion, and field study on how prejudice, stereotypes, and self-concepts can affect communication. Exploration of rhetorical methods to minimize these problems.

6375. Intercultural Communication. (3). Communicative interactions and functions between and among people with different national/cultural backgrounds.

†6802. Internship. (1-3). Field studies in communication; supervised practical work with government institutions, private business, film company, or broadcast and electronic media firm; written analysis of experience required. May be repeated for a maximum of 6 semester hours. **PREREQUISITE:** Permission of instructor.

6810. Broadcast Regulation and Program Policy. (3). Effects of F.C.C. and other governmental regulations on broadcasting and electronic media

management and operations; licensing, renewals, content control, politics, and copyright.

6811. Radio and Television Programming. (3). Analysis of individual program formats (with examples); use of this information along with ratings and other audience research to study the design of program schedules.

6812. Communications Law in the Performing Arts. (3). Artist, performer, management contractual relationships; acquisition, copyright and disposition of literary and audio-visual properties; production and distribution agreements; advertising law and other matters for TV, motion picture, radio and stage businesses.

6824. Cinematography/Videography. (3). Art of visual interpretation with a strong concentration in the theory and techniques of lighting. Experience with professional film and video cameras and lighting equipment. **PREREQUISITE:** COMM 3824.

6825. Editing of Film and Video Tape. (3). Aesthetics of continuity development in variety of editing styles; includes techniques of editing videotape and double system film. **PREREQUISITE:** COMM 3823.

6831. Broadcast and Cable Sales and Advertising. (3). Relation of broadcasting and cable sales and advertising to networks, station representatives, and salespeople; role of sponsors, agencies, and allied groups.

6841. Television Workshop. (1-4). Production of television programming for local cablecasting. May be repeated for a maximum of 8 semester hours; repetition will not result in change of any grade previously given. Permission of instructor.

6842. Television Studio Production II. (4). Advanced training in TV studio/multiple camera techniques. Extensive production work. **PREREQUISITE:** COMM 3842.

6850. Film History I. (3). (6852). Historical survey of motion pictures from medium's pre-history to 1940. Emphasis on narrative film.

6851. Film History II. (3). Historical survey of major movements, genres, and themes in narrative film from 1940 to 1960.

6853. Documentary Form in Film. (3). Development of non-fiction film as rhetorical and expressive form. Analysis of individual films, genres, and filmmakers.

6854. Documentary Form in Broadcasting. (3). History, theory, and criticism of non-fiction broadcasting, including docudrama and television documentaries.

6856. Women and Film. (3). Women as performers, viewers, subjects, and creators in American and international film.

6857. History of Broadcast and Electronic Media. (3). Comprehensive history of broadcast and electronic media as developed from 1895 to present.

6858. Contemporary Cinema. (3). Major themes and styles in international and American narrative film from 1960 to present.

6871. Broadcast and Cable Management. (3). Theories of management; special problems and situations confronting managers of broadcast and cable outlets, including personnel, engineering operations, programming, and sales functions.

6891. Producing and Directing for Film and Video. (3). Research and script preparation; budgeting and production management; working with actors and crew.

6960. Documentary Writing. (3). Writing for nonfiction media.

6970. Screenwriting. (3). Writing for fiction film and television. Basic dramatic theory, narrative structure, characterization, dialogue, adaption and unique demands of audio/visual media.

†7001-8001. Teaching Techniques for Graduate Assistants. (1-3). Overview and practical demonstrations of the art of teaching Oral Communication. Credit not applicable to major. May be repeated.

†7002-8002. Workshops in Communication for Graduate Assistants. (1-3). Presentation of research by faculty, graduate students, and visiting scholars. Credit not applicable to major.

†7003-8003. Communication Projects. (1-3). Participation in communication research and development of scholarly papers. Credit not applicable to major. May be repeated.

7013-8013. Seminar In Political Communication. (3). Study of research pertaining to variables in political communication, such as debates, commercials, consultants, ethics, coverage. Repeatable for 9 hours.

7101-8101. Seminar in Rhetorical Style. (3). Role of style in contemporary persuasive discourse. Repeatable for 9 hours.

7210-19-8210-19. Special Topics in Communication Studies. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated for maximum of 9 hours when topic varies.

7321. Communication Theory. (3). Theories, models, and approaches to study of communication.

7330-8330. Introduction to Research in Communication. (3). Survey of research in communication; emphasis on quantitative methods. Practical experience in research and data analysis.

7331-8331. Seminar in Communication Theory. (3). Specific topics, issues, and research in communication theory. Repeatable for 9 hours.

7332-8332. Seminar in Communication Research. (3). Communication research methods. Repeatable for 9 hours.

7350. Rhetorical Theory. (3). Development of rhetorical theory from c. 500 B.C. to present.

7360-8360. Seminar in Rhetorical Theory. (3). Research on concepts and hypotheses of theory of rhetoric; direction and discussion of independent work on rhetorical variables. Repeatable for 9 hours.

7362-8362. Seminar in Public Address. (3). Intensive study of selected topics in the analysis and criticism of public arguments. Emphasis on cross-cultural comparison of arguments and appeal in common rhetorical situations. May be repeated for a maximum of 6 credits.

7369-8369. Seminar in Organizational Communication. (3). Selected variables of organizational communication with emphasis on methods of analyzing and auditing communication within the organizational setting. Repeatable for 9 hours.

7371. Rhetorical Criticism. (3). (6371). Theories and perspectives for evaluating the art, ethics, and effects of messages in social and cultural contexts.

7374. Independent Studies in Communication Arts. (1-3). Independent research in areas of special interest including rhetoric, radio, television, and film. **PREREQUISITE:** Permission of the instructor.

7381-8381. Orality and Culture. (3). Meaning of literacy as it applies to communication in pre-literate, literate, and post-literate eras.

7802-8802. Seminar in Film History. (3). Intensive study of selected periods, genres, or filmmakers with emphasis on independent research project. Repeatable for 9 hours.

7804-8804. Seminar in Media Theory and Criticism. (3). Major critical approaches to media form and content; emphasis on film and television. Repeatable for 6 hours.

7805-8805. Seminar: Literature of Mass Communication. (3). Literature of mass communications. Topic area will vary each time offered. May be repeated for a maximum of 6 hours credit.

7806-8806. Seminar: Trends in Mass Communication. (3). Critical issue or issues facing communications today. Topics will vary each time offered. May be repeated for a maximum of 6 credits.

7807. Seminar: Mass Communication Theory. (3). Selected concepts of mass communication with special attention to variables, media, and tools in mass communication research.

7808-8808. Seminar: Mass Communication and Society. (3). Interrelationships between mass communications, the individual and society. Topics will vary each time offered. May be repeated for a maximum of 6 credits.

7809-8809. Seminar in Communication History. (3). Selected topics in history of communication,

including public address, film, broadcasting, and electronic media.

7811-8811. Seminar in Telecommunications Policy. (3). Social, economic and legal issues relating to use and governance of telecommunications industries; emphasis on public policy options available, and capability of existing policy-making institutions to mediate between conflicting international, national and industry interests.

7892. Film and Video Production. (1-3). Workshop for film and video production. Students write, produce, direct, or assume crew responsibilities on productions. May be repeated for a maximum of 6 credits. See departmental guidelines for independent production requirements and procedures. **PREREQUISITE:** COMM 3824 or permission of instructor.

7991-8991. Seminar in Comparative Media. (3). To demonstrate through intensive analysis what happens to the form and content of a creative work in its various adaptations: novel, condensation, stage, movie, and television. Open to all Theatre and Communication Arts majors and English majors.

K491 THEATRE (THEA)

6210-19. Special Topics in Theatre. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated for maximum of 9 hours when topic varies.

6401. Interpretation of Children's Literature. (3). Adaptation of literature for individual and group performances in children's theatre and its use for instruction in elementary and secondary schools. Topics include: styles of literature, principles of performance, and techniques for performance adaptation. May be repeated for a maximum of 6 hours with permission of instructor.

6441. Performance Repertory. (3). Group performance in dramatic and narrative theatre styles, dance and theatre movement. Repeatable for a maximum of 9 hours. **PREREQUISITE:** Prospective students must audition for and be cast in Memphis Moving Line Company.

6457. Interpretive Styles. (3). Exploration of performance style as it evolves from language, structure, and style of the literary text. Materials for performance will vary by each semester and may alternate among the genres of prose fiction, poetry, and period drama. Repeatable for a maximum of 9 hours when topic varies. Offered alternate years. **PREREQUISITE:** Permission of instructor.

6501. Advanced Movement Styles. (3). Advanced study in physical theatre styles. Varied semester topics: mask performance; fighting styles for period weapons; and physical theatre techniques for directors, teachers, and choreographers. Repeatable for maximum of 6 hours when topics vary. **PREREQUISITE:** permission of instructor.

6503. Creative Dramatics. (3). Basic techniques and theories for the use of dramatization in elementary and secondary education. Topics include socio-drama, dramatization of school subjects and daily concerns, and improvisation and creation of dramatic plays.

6515. Scene Painting. (3). Lecture-laboratory course covering the techniques of painting scenery for the stage. Offered alternate years.

6516. Technical Direction. (3). Lecture/laboratory for theatre technicians to include production organization and safety, engineering, rigging, materials control and supply ordering. Offered alternate years.

6523. Children's Theatre. (3). Theories and styles of children's theatre, application of principles to problems in production and preparation of plays designed for children's audiences. May be repeated for a maximum of 6 hours with permission of instructor.

6531. Acting Styles. (4). The development of acting styles as influenced by the environments of historical periods. Offered alternate years.

6532. Advanced Acting Styles. (4). Continued work in acting styles. Offered alternate years.

6551. Theatre History—Classic. (3). Shaping forces and theatrical forms in Western civilization from Greek times to Romanticism. Offered alternate years.

6552. Theatre History—Modern. (3). Continuation of 6551 to the present. Offered alternate years

6554. Costume History. (3). Survey of clothing fashions from primitive times to present, special emphasis on psychological implications of fashion change applicable to theatre. May be repeated for a maximum of six hours. Offered alternate years.

6555. Technical Production Studio: Theatre Technology. (3). Lecture/laboratory using traditional and contemporary materials and scenic technologies including rigging, metals and welding, wood working, and plastics. **PREREQUISITE:** 3511 or permission of instructor.

6556. Technical Production Studio: Lighting and Sound. (3). Technical principles which support areas of theatrical lighting and sound design; includes instrumentation and equipment, electricity and electronics, control systems, operational and maintenance principles, and procedures for stage electricians and sound engineers.

6557. Technical Production Studio: Costume. (3). Intermediate costume construction techniques employing both traditional and experiential methods for sewing; brings costume design from concept to reality. **PREREQUISITE:** THEA 3562 or permission of instructor.

6571. Playwriting. (3). Theory and principles of writing plays for the stage. Practice in writing either the short or long play. Offered alternate years.

6592. Theatre Architecture & Facilities Planning. (3). Processes and techniques employed by theatre planners in design and construction/renovation of theatrical spaces and structures. Includes survey of theatre forms, historical development of theatrical structures and spaces, programming methods and procedures, specification, renovation techniques, multiuse structure concepts, and consultation procedures and practices. Offered alternate years. **PREREQUISITE:** Permission of instructor.

6595. Theatre Sound. (3). Technical and theoretical principles, equipment, operational techniques, systems design, creative design processes, and aesthetics for theatre sound; application of traditional and contemporary techniques and equipment. Research, project work, and realized sound designs required. Offered alternate years.

6631. Acting for Film and Television. (4). Educational experience for the actor in the media of film and television, concentrating on dramatic, commercial and documentary properties. Offered alternate years.

7210-19-8210-19. Special Topics in Theatre. (1-3). Topics are varied and announced in *Schedule of Classes*. May be repeated for maximum of 9 hours when topic varies.

7431-8431. Seminar in Directing Narrative Theatre. (3). Theory and technique for directing literary texts not originally written for the theatre. Stage adaptations of short stories, novels, and compiled scripts. Script preparation and directing projects required. Repeatable for a maximum of 6 hours. Offered alternate years. **PREREQUISITE:** THEA 7521 or permission of instructor.

7440-8440. Seminar in Critical Studies. (3). Advanced studies in theatre criticism, dramatic literature, and theatre history. Methods of scholarly research appropriate for the dramaturg and producing artist. Semester topics alternate among studies of selected authors, periods, genres, and theatre movements. Repeatable for a maximum of 9 hours when topic varies. Offered alternate years. **PREREQUISITE:** Permission of instructor.

7521-8521. Stage Direction. (3). Processes of stage direction from script interpretation to rehearsal and performance with emphasis on the collaborative interplay between stage director and designer; traditional and non-traditional theatrical modes; directing projects required. Offered alternate years.

7526-8526. Directing Studio. (3). Seminar/practicum investigation of advanced techniques of the stage

director; styles of production, creative interpretation of established dramatic literature and/or creation of original work for the stage. Directing project required. Repeatable for a maximum of 9 hours. **PREREQUISITE:** THEA 7521.

7551-8551. Seminar in Theatre Aesthetics. (3). Aesthetic theories affecting the theatre from Classical Greece to the present. Special attention to the study of interrelationship between theatre and the other arts. May be repeated for maximum of 6 hours. Offered alternate years.

7553-8553. Styles of Directing. (3). Production styles and methodologies evidenced in art of major modern directorial innovators. Directing projects required. Repeatable for a maximum of 6 hours with permission of instructor. Offered alternate years.

7554-8554. Seminar in Directing. (3). Conceptual and practical studies in stage direction with emphasis on the collaborative interplay between stage director and actor. Directing projects required. Repeatable for a maximum of six hours with permission of instructor. Offered alternate years. **PREREQUISITE:** Permission of instructor.

7560-8560. Directed Studies in Design and Technical Production. (3). Individually supervised design and technical production projects in areas of scenery, costumes, lighting, and sound. Repeatable for a maximum of 9 hours. **PREREQUISITE:** Permission of instructor.

7561. Design Studio: Scenery. (3). Studio explorations of creative design process and its relation to theatrical space and environment. Emphasis on analysis, creative expression, and portfolio development involving two and three dimensional scenic design projects.

7562. Design Studio: Lighting and Sound. (3). Aesthetic principles and practical methodologies for design of lighting and sound; expression of style in various theatrical forms and modes of production. Research, criticism, project work and staged scenes required. **PREREQUISITE:** THEA 7556 or permission of instructor.

7563. Design Studio: Costume. (3). Exploration and application of aesthetic principles of costume design. Special consideration to interpretation of character and period through line, color, and fabric, employing variety of rendering processes in the studio environment.

7564-8564. Principles of Scenography. (3). Basic principles and theories of modern Scenography. Areas of investigation shall include scene, light, and costume design as they relate to the total production. Offered alternate years.

7571-8571. Advanced Playwriting. (3). Continuation of theories and practice of playwriting with the object of achieving a finished script, ready for production. **PREREQUISITE:** THEA 6571. May be repeated for maximum of 9 hours. Offered alternate years.

7581-8581. Seminar in Dramatic Theory and Criticism. (3). Major documents in dramatic theory and criticism from Aristotle to present. Offered alternate years.

7582-8582. Analysis of Dramatic Literature. (3). The dramatic text as basis for unified and purposeful production concept; advanced techniques of director and scenographer used to solve artistic/practical problems of specific plays. Offered alternate years.

7592-8592. Theatre Planning & Management. (3). Principles of theatre planning and management for educational and regional theatres. May be repeated for maximum of 9 hours. Offered alternate years.

†7600-8600. Internship. (1-3). Supervised work completed in a professional setting. Repeatable for a maximum of 6 hours. **PREREQUISITE:** Permission of the advisory committee.

†7800-8800. Research in Theatrical Practice. (3). Research, practice, methodology, or pedagogy in theatre. Open only to graduate assistants. May be repeated for a maximum of 12 hours. Credit not applicable to major.

K497 DANCE (DANC)

6101. Dance Repertory. (3). Exploration of stylistic, technical, and expressive elements in rehearsal and performance. May include notated works, faculty, and guest artist choreography. *May be repeated for maximum of 9 hours.* PREREQUISITE: Permission of instructor.

6201. Dance Composition. (3). Investigation of movement sources and development of elements of choreographic craft. Emphasis on solo and duet work. *May be repeated for maximum of 6 hours with permission of instructor. (Offered alternate years.)*

6301. Directed Studies. (1-3). Individual study, research, or practicum. *May be repeated for maximum of 12 hours.* PREREQUISITE: Permission of instructor.

6000-6029. Special Topics in Dance. (1-3). Topics are varied and announced in *Schedule of Classes*. *May be repeated for maximum of 9 hours when topic varies.*

K495 THEATRE AND COMMUNICATION ARTS (THCA)

7993-8993. Special Problems. (1-3). Individual investigation of special research projects not included in thesis.

7994-8994. Special Problems. (1-3). (Same as Above).

†7995-8995. Production Practicum. (3-6). Creative performance or production project suitable for public presentation and/or a practical application. Project to be determined in consultation with and directed by the student's supervisory committee.

†7996. Thesis. (1-6).

† Grades of S, U, or IP will be given.

WHILE COLLEGES SHOULD BE PURPOSEFUL, AND JUST, AND DISCIPLINED— AS WELL AS OPEN—THE UNIQUE CHARACTERISTIC THAT MAKES THESE OBJECTIVES WORK, THE GLUE THAT HOLDS IT ALL TOGETHER, IS THE WAY THE PEOPLE RELATE TO ONE ANOTHER. AS IMPOSSIBLE AS THE GOAL MAY SEEM TO BE, A MODERN COLLEGE OR UNIVERSITY SHOULD BE A PLACE WHERE EVERY INDIVIDUAL FEELS AFFIRMED AND WHERE EVERY ACTIVITY OF THE COMMUNITY IS HUMANE.

— THE CARNEGIE FOUNDATION,
CAMPUS LIFE: IN SEARCH OF COMMUNITY

THE COLLEGE OF EDUCATION

NATHAN L. ESSEX, Ph.D.,
Dean

GEORGE W. ETHERIDGE, Ed.D.,
Director of Graduate Studies

GRADUATE ACADEMIC PROGRAMS

Department	Major	Concentration Within Major	Degree Offered
Consumer Science and Education	Consumer Science and Education		Master of Science (M.S.)
	Clinical Nutrition		Master of Science (M.S.)
Counseling, Educational Psychology and Research	Counseling and Personnel Services	(1) School Counseling (2) Community Agency Counseling (3) Rehabilitation Counseling (4) Student Personnel Services	Master of Science (M.S.)
			Doctor of Education (Ed.D.)
	Counseling Psychology		Doctor of Philosophy (Ph.D.)
	Educational Psychology and Research	(1) Educational Psychology (1) Educational Research	Master of Science (M.S.) Doctor of Education (Ed.D.)
Human Movement Sciences and Education	Exercise Science and Health Promotion	(1) Exercise and Sport Science (2) Health Promotion	Master of Science (M.S.)
Instruction and Curriculum Leadership	Instruction and Curriculum Leadership	(1) Instruction and Curriculum (2) Instructional Design and Technology (3) Reading (4) Early Childhood Education (5) Special Education	Master of Science (M.S.) Doctor of Education (Ed.D.)
		(1) Early Childhood Education (2) Elementary Education (3) Secondary Education (4) Special Education	Master of Arts in Teaching (M.A.T.)
Leadership	Leadership and Policy Studies	(1) School Administration and Supervision (2) Leadership	Master of Science (M.S.)
		(1) Educational Leadership (2) Community Education (3) Policy Studies	Doctor of Education (Ed.D.)
	Higher and Adult Education	(1) Higher Education (2) Adult Education	Doctor of Education (Ed.D.)
Interdisciplinary	Education		Education Specialist (Ed.S.)

Graduate programs in the College of Education prepare students to be leaders within their professional areas of education. Candidates for a degree must design a curriculum plan which has the approval of their major adviser, the department chair, and the Director of Graduate Studies.

The College of Education offers degrees at the master's, specialist, and doctoral levels. The master's degree programs are the Master of Arts in teaching (M.A.T.) and Master of Science (M.S.). Offered at the post-master's level are the degrees of Education Specialist (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.) with a major in Counseling Psychology.

Graduate degrees in the College of Education are available in the departments of Consumer Science and Education; Counseling, Educational Psychology and Research; Human Movement Sciences and Education; Instruction and Curriculum Leadership; and Leadership.

For specific information concerning majors, areas of concentration, course requirements, etc., students should review the program descriptions which are found under the departmental listings in this Catalog. See the list of academic programs at the beginning of this Catalog for majors and concentrations.

MASTER'S DEGREE PROGRAMS

The College of Education offers programs leading to the Master's degree in the departments of Consumer Science and Education; Counseling, Educational Psychology and Research; Human Movement Sciences and Education; Instruction and Curriculum Leadership; and Leadership.

Master of Science Degree (M.S.)

The Master of Science degree is available to individuals who are already licensed and want to expand their work in their teach-

ing areas or individuals without licensure who desire to work in education-related settings but do not need teacher licensure. This degree is directed toward the development of competencies necessary for leadership and advancement in K-12 settings and fields related to education.

Master of Arts in Teaching Degree (M.A.T.)

The Master of Arts in Teaching degree is designated for people with outstanding undergraduate records who are seeking initial teacher licensure at the graduate level. It is also available to those already licensed who seek additional licensure in one or more areas. Students may pursue licensure in special education, early childhood, elementary or secondary fields.

Teacher Licensure

Individuals who wish to acquire teaching licensure without pursuing a degree may enroll in the licensure program.

Admission to Master's Degree Candidacy

Upon notification of admission to the Graduate School, the student may enroll and begin to take courses. However, a student's initial enrollment in no way should be taken to mean acceptance for degree candidacy. To become a candidate for a degree, the student must file an "Application for Admission to Master's Degree Candidacy" form which is available in the Graduate School or in the Dean's Office. For information on the procedures for completing degree candidacy forms, the student should consult the major adviser.

Appointment of Adviser

Prior to initial enrollment, the student is advised to arrange an interview with the chair or a representative of the department in which the student plans to major. At this meeting the student will be assigned an adviser who will help the student in planning a program of studies.

Workshops and Independent Study Credits

The maximum combined credit in "Independent Study" and "Workshop" courses that can be applied to the master's degree is 10 semester hours with no more than 6 semester hours applying to the major. Seven semester hours of credit in "Independent Study" courses may be applied to master's degree requirements, but no more than 4 of these hours may be taken in either the major or the collateral area.

If the student should elect to take "Workshop" courses and no "Independent Study" courses, only 6 workshop hours could apply to the major.

Other Requirements

The degree program must contain a minimum of 36 semester hours. For all programs except Consumer Science and Education, a minimum of 70% of the total required hours must be taken at the 7000 level. At least 12 semester hours of these must be taken in the major.

Program of Studies

Each student, in consultation with an adviser, will plan a program of studies leading to the fulfillment of the requirements for one of the degrees listed below.

Minimum requirements for the Master of Science degree are:

Major:	
Content for Specialty	18-21 hours
Research	
(EDPR 7521 or 7523)†	3 hours
Electives (selected in consultation with student's adviser)	12-15 hours
Total	36 hours

†EDPR 7521 or 7523 must be taken within the first 9 hours of the program.

Minimum requirements for the Master of Arts in Teaching degree are:

Major:	
Content for Specialty	30-46 hours
(Includes thesis or special project)	
Research	3 hours
College Core	3 hours
Cultural Foundations or Educational Psychology courses (EDPR-EDPS)	
Supportive Studies	6-9 hours
Total	43-57 hours*

*Students enrolled in an articulation agreement between a designated college and The University of Memphis may be required to take fewer hours.

Substitutions for Required Courses

Any substitutions for departmental required courses in the major must be approved by the adviser and the department chair. Substitutions which effect college or degree requirements must be approved by the adviser, the department chair, and the College Director of Graduate Studies.

Master's Thesis

A thesis of 3 to 6 semester hours may be presented as partial fulfillment of degree requirements. Immediately after the assignment of a thesis topic the student must submit the "Application to Write a Thesis or Dissertation" form to the Graduate School Office.

Each degree candidate must enroll for a minimum of 3 hours thesis credit each semester until the thesis is completed. A student who fails to complete the thesis at the end of the academic semester following registration for the total credits allowed to count toward the degree will be required to renew their status. In order to remain in active status, the candidate will be required to register for 1 hour of thesis credit each academic semester until the thesis is completed. (The summer session will be considered an academic semester for this purpose.) A student must be registered for 3 hours of thesis credit in the semester of graduation. Credit will be posted upon the completion and acceptance of the thesis, but no more than 6 hours will be counted toward degree requirements for a master's thesis. This requirement may be waived for any semester the adviser is not on campus or for other reasons approved by the major adviser, the department chair, and the Director of Graduate Studies of the College of Education.

Students in the M.A.T. program may not enroll in thesis credit during the semester of student teaching.

Thesis Guidelines

Theses must be prepared according to guidelines specified by the College and the *TCGS Guide to the Preparation of Theses and Dissertations*. For specific information, a student should consult his/her major adviser.

Special Project

Students choosing to complete a special project for the M.A.T. degree must enroll in 3 hours of special project credit. A grade of IP (In Progress) will be assigned until the special project is completed.

Master's Comprehensive Examination

Before being recommended for graduation, every candidate for the master's degree is required to pass a final comprehensive examination. It may be oral or written or both, at the discretion of the department concerned.

The comprehensive exam is administered each semester and during the summer session. The student must consult the "Schedule of Classes" of the semester the student plans to take the exam for information about application deadlines and the exam schedule. To be permitted to take the exam, the student must sign up in the department office before the indicated deadlines.

Departmental requirements with reference to thesis, research, and course requirements for each of these degree programs are found under the appropriate departmental sections in the Catalog.

TEACHER EDUCATION LICENSURE AT THE GRADUATE LEVEL

The Master of Science degree program is used for adding endorsements in the areas of Administration/Supervision (grades K-8), Administration/Supervision (grades 7-12), and Superintendent School Counselor (grades K-8 or 7-12), Special Teacher of Reading (grades K-8 or 7-12), Early Childhood (PreK-3), Special Education: Modified or Comprehensive (grades K-12), and Special Education: Preschool. The applicant who wishes to add these areas must complete an approved program and be recommended by the College. To be recommended for adding an endorsement in these areas, one must hold a valid Tennessee License with endorsement in the appropriate area (grades 1-8, 7-12, or K-12).

To obtain a Tennessee License with an endorsement in one of the following areas: School Counselor (Grades 7-12), School Psychologist, or Speech and Hearing, the applicant must complete the approved program and be recommended by the College.

Initial Teacher Licensure

Two graduate level teacher preparation programs for initial licensure are offered by the College of Education. The Master of Arts in Teaching (M.A.T.) program is the degree through which initial teacher licensure at the graduate level can be obtained. The licensure program is for students seeking initial teaching licensure but not a master's degree. Both programs are available for Early Childhood (PreK-

3), Elementary (1-8), Secondary, Special Education: Modified or Comprehensive (K-12), and Special Education: Preschool.

Adding New Endorsement Areas

The Master of Arts in Teaching degree may also be pursued by students wishing to change their teaching fields. Students pursuing this degree will be required to meet the departmental prerequisites and teaching licensure requirements. Students may prepare in more than one discipline if they are seeking teaching endorsements in more than one field.

Internships/Student Teaching

Students seeking initial licensure or add-on endorsements must complete at least one semester student teaching/internship requirements in the placements coordinated and approved by the Coordinator of Field Experiences in the College of Education. Students seeking most licensures may not student teach/intern during the summer semester.

Policies Governing Licensure at the Graduate Level

Students who have received a bachelor's degree from an accredited institution that did not qualify them for a teacher's license may become eligible for licensure by enrolling as a graduate master's student in the M.A.T. degree program or by enrolling as a graduate non-degree student in the licensure program and completing the requirements for the program according to the current catalog. These candidates should confer with the teacher licensing advisers concerning individual program requirements. Before the College of Education will recommend a candidate to the Tennessee State Department of Education for teacher licensure, at least 50% of the professional education requirements for licensure must be completed at The University of Memphis.

Procedures for Admission to the Graduate Level Teacher Preparation Programs

The student must apply for admission to the Graduate School and to the Master of Arts in Teaching degree program or the licensure program. When approved, the student will be assigned a graduate adviser.

For initial licensure the student must have an appropriate undergraduate major for the area of teaching licensure being sought.

Adding an endorsement at the graduate level which requires The University of Memphis's recommendation may be accomplished by completing the requirements of the approved program. Information can be obtained from the teacher licensing adviser.

Simultaneously with admission to the M.A.T. or teacher licensure program, the student must apply for and meet stan-

dards required for admission to the Teacher Education Program (TEP). Application for student teaching/internship is submitted the semester before enrolling in student teaching/internship.

For additional information, consult the general adviser in the College of Education.

The Master of Arts in Teaching degree may be earned with the completion of a thesis or special project. The acceptability of the student's overall performance in the M.A.T. program will be demonstrated through a written or oral examination near the end of the student's program.

For a more detailed explanation of the program, see the Department of Instruction and Curriculum Leadership program description.

POST-MASTER'S DEGREE PROGRAMS

The post-master's degree programs of the College of Education require the candidate to have a clear professional goal and a commitment to scholarship, leadership, and excellence. To accomplish this, a close, continuous professional interaction between the candidate, faculty, and fellow students is an integral part of the program of study.

To be admitted to post-master's degree candidacy in the College of Education, the student must first meet all Graduate School requirements and then complete a candidacy file in the department in which admission is sought.

Education Specialist (Ed.S.)

The Education Specialist is an interdisciplinary degree designed to provide an individualized, flexible program of studies for the educator practitioner in either a school or non-school setting, whose academic interests are aimed at specific and individual career goals and needs. It offers opportunities for advanced professional specialization including a relevant culminating experience or a thesis. Studies may be focused in the departments of Counseling, Educational Psychology and Research, Instruction and Curriculum Leadership, and Leadership. A collaborative Ed.S. is offered with The Department of Psychology.

Doctor of Education (Ed.D.)

Doctor of Education programs in the College of Education are designed to improve the competency of teachers, counselors, supervisors, and administrators; to serve the career needs and goals of individuals in education-related fields; to encourage research in a student's area of concentration; and to initiate and implement programs involving the school and the community. The programs provide both breadth and depth of preparation through a flexible combination of academic specialization, interdisciplinary study, and significant research.

Doctor of Philosophy (Ph.D.)

The Ph.D. in Counseling Psychology is offered by the Department of Counseling, Educational Psychology and Research. It is designed to meet the needs of candidates who wish to seek licensing as counseling psychologists.

Admission to Post-Master's Candidacy

Admission to the Ed.S., Ed.D., and Ph.D. programs is administered by the department in which the student wishes to concentrate. After completion of the department's candidacy file, the department admissions committee will act on the application and notify the student of its action.

Appointment of Advisory Committee

When admitted to candidacy, the student should consult with the department chair and the temporary adviser in order to secure the appointment of a permanent major adviser who will also serve as chair of the program advisory committee. The department chair, following consultation with the student and the major adviser, will make a recommendation to the director of graduate studies concerning the appointment of a graduate program advisory committee to assist the student in planning a complete program of studies. Upon approval by the director of graduate studies, the appointment will be forwarded to the Graduate Dean.

The student's program advisory committee for the Ed.S. and Ed.D. degrees shall be composed of at least three members. Each committee member must be a member of the Graduate Faculty at The University of Memphis.

PROGRAM OF STUDIES

All programs of study for the Ed.S., Ed.D., and Ph.D. degrees are individually designed by the student and the program advisory committee to accomplish the student's educational goal and insure mastery of the knowledge, skills, and dispositions requisite of the discipline.

Time Limitations

Each student, in consultation with the program advisory committee, will plan a complete program of studies. The program of studies must be placed on file with the director of graduate studies before the end of the semester immediately following admission to the program. No doctoral student may be considered as officially in residency unless the student has filed a program of studies, signed by the program advisory committee.

The student's program of studies for the Ed.S. degree must include a minimum of 33 semester hours earned no more than six years prior to the date of graduation.

The student's program of studies for the Ed.D. degree must include a minimum of

54 semester hours earned no more than ten years prior to the date of graduation.

Acceptance of Transfer Credit

Credit earned at another institution must be presented for consideration at the time the student is accepted for candidacy. Upon approval by the student's program advisory committee, the credit will be transferred to apply toward the Ed.S. or Ed.D., provided that the credit meets the general University and specific program requirements.

Approved transfer credit may be accepted for not more than 6 semester hours of post-master's degree course credit for the Ed.S. degree and 12 semester hours of post-master's degree credit for the Ed.D. degree.

Other Requirements

The maximum combined credit in Independent Study and "Workshop" courses that can be applied to Ed.S. degree requirements is 9 semester hours.

The maximum combined credit in Independent Study and "Workshop" courses that can be applied to the Ed.D. degree requirements is 18 semester hours.

Planning the Program

Minimum requirements for the *Education Specialist* degree are:

Major		
Content for Speciality (Including 6 hours culminating experience)	21 hours	
College Core (Complete one three hour course in research* and one three hour course in educational psychology appropriate to the area of study.)	6 hours	
Electives	6 hours	
Total	33 hours	

Minimum requirements for the Doctor of Education degree are:

Major		
Content for Speciality (Includes 9-12 hours dissertation)	42-45 hours	
Research Core* EDPR 8541, 8542 and 3-6 hours of research electives	9-12 hours	
Total	54 hours**	

*A master's level introduction to research course is assumed.

**If at least six semester hours of graduate level mode one course work in cultural, historical, or psychological foundations of education has not been completed, it must be completed during the first year of enrollment in the doctoral program, and these hours cannot be applied to the degree.

Changes in Program of Studies

Any changes to be made in a program of studies must be submitted on the appropriate form and must have the approval of the program advisory committee, the department chair, and the Director of Graduate Studies.

RESIDENCY

Students working toward the doctoral degree must fulfill the University and College residency requirement after filing a program of studies.

Purpose

The purpose of residency is to provide the doctoral student with significant time for sustained contact with faculty members. An expected outcome is the acquisition of skills of inquiry, an opportunity for research, and the incorporation of professional values into the experience that the student brings to graduate school. Also, it facilitates the creation of a cohesive climate in which inquiry becomes the linking feature of the graduate student experience. In short, residency is expected to be a vehicle for socialization into the shared community of professional life. At the heart of that community lies a commitment to sustained inquiry that extends beyond the period of doctoral preparation and into the student's lifetime work, either as a practitioner or as one who demonstrates leadership based on a foundation of inquiry.

Doctoral Residency Policies

- A doctoral student must select one of the following course enrollment options:
 - The student will maintain two semesters of continuous enrollment of 9 hours per semester. The enrollment requirement may be satisfied by enrolling in fall, spring, and summer semesters.
 - Three semesters of continuous enrollment of 6 hours per semester;
 - Nine hours of enrollment per semester during two consecutive summers and at least 3 hours per semester during the intervening fall and spring semesters.
- A plan of residency will be developed by the student and major professor. The plan will be reviewed by the department.
- The plan of residency consists of the following elements:
 - The plan will be contained in a 3-5 page document.
 - It will contain an introduction to the problem area that the student will address during the coming period of residency. This introduction will include a specification of the problem, an indication of its importance, and a brief summary of pertinent literature placing the problem in its context. Relevant theoretical implications will be noted.

c. It will detail a plan of action including projected time benchmarks to resolve the problem. It is expected that this plan will allow for a sustained and multifaceted inquiry that incorporates significant components derived from the literature and have implications for the field of study.

d. Tools of inquiry expected to be required in the course of completing the residency will be noted. If the candidate possesses these tools, some indication documenting the mastery of the tool component should be noted. If skills of inquiry are to be acquired during the course of the residency this must be noted.

e. Faculty resources associated with each component of the plan must be indicated. It is expected that the student will be in contact with individuals who have been engaged in this area beyond the campus.

f. The products of the residency will be noted. It is expected that the residency will lead to a paper submitted to a refereed journal or presented at a peer reviewed conference.

Timetable for Filing for Residency

Prior to beginning residency, the written plan must be filed. The plan must have the approval signatures of the chair of the candidate's program advisory committee and of the department chair. It must be submitted to the department office of the candidate's major for approval no later than the last day of graduate registration in the semester designated to count as residency. Students are expected to have satisfied requirements for admission to the doctoral program before filing a residency plan.

Comprehensive Examination for the Ed.S., Ed.D., and Ph.D. Degrees

When the candidate for the Ed.S., Ed.D., or Ph.D. degrees has completed all course requirements or is enrolled in the last course in the candidate's program of study, exclusive of the culminating experience or dissertation, the candidate must pass a comprehensive exam, written and oral, covering the major and collateral fields of study. For Ed.D. and Ph.D. candidates, residency must be completed prior to taking the comprehensive exams. The student who successfully passes the comprehensive exam will be designated as a Late Doctoral Candidate or Late Specialist candidate in the candidate's degree status.

ED.S. CULMINATING EXPERIENCE AND DOCTORAL DISSERTATION

The Ed.S. degree candidate will present a six hour culminating experience appropriate to the major area of specialization. This may be fulfilled through a thesis based on research related to the major, a field study of a significant problem, an organized internship, or a special project appropriate to the major.

An acceptable dissertation is a requirement for all doctoral degrees. The dissertation must embody the results of an extended research effort which is an original contribution. It should reflect the candidate's ability to conduct independent research and interpret in a logical manner the facts and phenomena revealed by the research. The student will be required to meet the specific regulations of the major department and of the Graduate School. The Ed.D. degree candidate will present a dissertation for 9-12 hours' credit.

Enrollment Requirements

Each degree candidate must enroll for a minimum of 3 hours of field study, culminating experience, or dissertation credit each semester until the project is completed. A student who fails to complete the culminating experience/dissertation at the end of the academic semester following the registration for the total credits allowable will be required to renew academic status. In order to remain in active status, the candidate will be required to register for 1 hour of culminating experience or dissertation credit each academic semester until the project is completed. (The summer session will be considered an academic semester for this purpose.) A student must be registered for 3 hours of culminating experience or dissertation credit in the semester of graduation. Credit will be posted upon the completion and acceptance of the culminating experience or dissertation, but no more than 6 hours will be counted toward degree requirements for an Ed.S. culminating experience and no more than 12 hours for a doctoral dissertation.

This requirement may be waived for any semester the adviser is not on campus or for other reasons approved by the major adviser, the department chair, and the director of graduate studies of the College of Education.

Failure to remain on active status without an approved waiver will result in reevaluation of the candidate's status in the program by the program advisory committee.

Committee Membership for Supervision of the Dissertation

After completing the comprehensive examination, the candidate will form a dissertation advisory committee of at least four graduate faculty members. The dissertation advisory committee will direct the development of the candidate's prospectus, dissertation, and defense. The chair (major professor) must be a full graduate faculty member from the candidate's area of concentration within the major. At least one other committee member must be a faculty member in the candidate's major. The department chair, following consultation with the candidate the major adviser, will make a recommendation to the director of graduate studies concerning the appointment of the dissertation advisory committee.

Doctoral Prospectus

1. In order to provide a relatively uniform framework for preparation of doctoral prospectus, the College of Education has specified a format to be followed in its preparation. Copies of the format may be obtained from the major adviser or from the office of the director of graduate studies.

2. Once a prospectus is approved, it is expected that the study will be completed within three years; if not, the program advisory committee will reevaluate the candidate's status in the program.

"Early doctoral student" designation applies to all doctoral candidates from the time of formal admission to candidacy in the College of Education until the time of completion of course work and passing the comprehensive exam. At that time the candidate is redesignated as "late doctoral student."

Culminating Experience/ Dissertation Guidelines

Culminating experiences and dissertations must be prepared according to guidelines specified by the College and the TCGS Guide to the Preparation of Theses and Dissertations. For specific information, the student should consult his/her major adviser.

Final Examination (Culminating Experience/Dissertation Defense)

After the completion of the culminating experience/dissertation and all other prescribed work for the degree, all candidates will be given a final oral examination dealing primarily with the culminating experience/dissertation and its relation to the candidate's major field of study. This exam will be conducted by the student's dissertation advisory committee.

GRADUATE ASSISTANTSHIPS

Graduate assistantships for post-master's students are available in most of the academic areas of the College of Education, and a limited number of graduate assistantships for master's students are available. All graduate assistantships are governed by the *Graduate School Handbook: Graduate Assistants*.

Active work and satisfactory progress toward a degree are necessary to hold an assistantship, and graduate assistants are required to be registered in each term in which they hold assistantships. Full-time graduate assistants take twelve hours of course work per semester and serve 20 hours per week on the assistantships.

Permission for graduate assistants to take as few as six credit hours in a semester may be granted by the College of Education director of graduate studies upon the recommendation of the department chair. Permission to take more than twelve hours may be granted upon recommendation of the department chair and the College of Education director of graduate studies.

CONSUMER SCIENCE AND EDUCATION

DIXIE R. CRASE, Ph.D., Chair
and Coordinator of Graduate Studies

I. The purpose of the Master of Science with a major in Consumer Science and Education is to provide an advanced educational option for both school personnel and other individuals preparing for, or pursuing, careers based on home economics and marketing education subject matter. This degree serves all disciplines in home economics and marketing education in an integrative, interdisciplinary advanced program that allows individualization.

The Department also offers the Master of Science degree with a major in Clinical Nutrition.

II. M.S. Degree Program – Major in Consumer Science and Education

A. Program Prerequisites

1. Completion of an undergraduate major in one of the several specific areas of home economics or a closely allied field such as marketing, art, or science.

2. Meet University requirements for admission to Graduate School.

3. Completion of academic deficiencies in course work if, after faculty evaluation of transcripts, it is deemed necessary.

B. Program Requirements

1. A total of 36 semester hours is required of all students, six hours of which must include either thesis or internship in one specific area of Consumer Science and Education:

a. Eighteen semester hours are required in the major as a departmental core and consist of the following courses:

CSED 7212 Applied Nutrition for Health (3)
CSED 7600 Entrepreneurship in Consumer Science and Education (3)

CSED 7700 Professional Practices in Consumer Science and Education (3)
CSED 7800 Consumer Issues: Family Systems Management (3)

CSED 7996 Thesis (6)

or
CSED 7400-7407 Internship in Consumer Science and Education (6)

b. A minimum of nine semester hours of 7000 level course work supportive of the major must be taken in a collateral area either outside or within the Department.
c. A minimum of nine semester hours of required research-related electives to include:

EDPR 6530 Microcomputers in Education: Theoretic and Technical Foundations (3)

or
EDPR 7531 Computer as a Research Tool (3)

and
EDPR 7523 Applied Educational Research (3)

EDPR 7541 Statistical Methods Applied to Education (3)

2. Successful completion of a written comprehensive examination for students not taking the thesis option; successful completion of oral comprehensive examination for those electing the thesis option.

III. M.S. Degree Program – Major in Clinical Nutrition

A. Program Prerequisites

1. Completion of an undergraduate major in foods and/or nutrition or to include an American Dietetics Association (ADA) approved Didactic Program in Dietetics.

2. Undergraduate grade point average of at least a B (3.0 on a 4.0 scale).

3. Score at least 900 on the Graduate Record Examination or 38 on the Miller Analogies Test.

4. Completion of application procedures for admission to Graduate School.

5. Demonstration of interest in the field of clinical nutrition by letter, documentation of work experiences, and evidence of above average performance documented by letters of reference.

6. Enrollment limitation of 8 to 12 students per year.

7. An additional program fee is required for the internship.

B. Program Requirements

1. Coursework must be taken in sequence.

2. A total of 48 hours is required for completion of this major, six hours of which must be thesis and 12 hours of which must be internship and residency.

a. Twenty-one hours are required in the major as core and consist of the following courses:

- CSED 7202 Current Issues in Foods and Nutrition (3)
- CSED 7412 Cellular Nutrition I (3)
- CSED 7422 Cellular Nutrition II (3)
- CSED 7432 Nutrition and the Life Cycle I: Maternal, Infant, and Child Nutrition (3)
- CSED 7433 Nutrition and the Life Cycle II: Adolescent, Adult, and Geriatric Nutrition (3)
- CSED 7442 Clinical Nutrition Administration (3)
- CSED 7522 Advanced Food Systems Management (3)
- b. Twelve hours are required as a research collateral and include the following courses:
- EDPR 7523 Applied Educational Research (3)
- EDPR 7521 Statistical Methods Applied to Education (3)
- CSED 7996 Thesis (6)
- c. Twelve hours are required as a clinical internship component that includes nine hours for the ADA developmentally accredited dietetic internship and three hours of advanced clinical practice. The required courses include:
- CSED 7452 Clinical Internship I (3)
- CSED 7462 Clinical Internship II (3)
- CSED 7472 Clinical Internship III (3)
- CSED 7482 Clinical Residency (3)
- d. Three hours of electives of student's choice either outside or within the department.
- e. The student entering the program, having completed an ADA accredited dietetic internship with proof of registration as a dietitian, may waive clinical nutrition internship I, II, and III.
3. Successful completion of a written comprehensive exam.
4. Oral defense of thesis.

7771 CONSUMER SCIENCE AND EDUCATION (CSED)

6101. **Preschool Curriculum.** (3). (HMEC 6101). Application of child development principles to program planning; infancy through four years of age.
6204. **Furnishings Problems and Presentations.** (3). (HMEC 6204). Problems in planning, coordinating and purchasing of home furnishings. PREREQUISITE: HMEC 2004, 4304 or CSED 2004, 4304.
6205. **Behavioral Science Aspects of Clothing.** (3). (HMEC 6205). Interdisciplinary study of clothing and appearance; concepts, methodologies and applications of behavioral science to clothing.
6300. **Family Resource Management.** (3). (HMEC 6300). Investigates values, goals, and human and material resources necessary for individuals and families to make informed management decisions throughout the life span.
6304. **Trends in Housing and Home Furnishings.** (3). (HMEC 6304). Major trends and influences on contemporary residential furnishings as these affect home furnishings merchandising. PREREQUISITE: HMEC 2104 OR CSED 2104.
6383. **Materials and Methods in Secondary Home Economics.** (3). (HMEC 6383). Methods in high school subjects with an emphasis in Home Economics instruction; graduate or transfer students seeking update or initial certification.
6393. **Occupational Education in Home Economics.** (3). (HMEC 6393). History, philosophy, and organization of Home Economics Occupational Education; special emphasis will be given to instructional strategies and evaluation through classroom and on-site participation.
6405. **Textiles.** (3). (HMEC 6405). Selection, use and care of textiles related to properties of fibers, yarn structures, fabric construction, and finishes. Morphology and chemistry of fibers, finishes, dyes, fabric maintenance, and procedure involved in fiber, yarn, and fabric identification.
6602. **Community Nutrition.** (3). (HMEC 6602). Nutritional problems and practices of various ethnic, age and socioeconomic groups; study of the community and agencies concerned with meeting these needs. PREREQUISITE: HMEC 2202 or CSED 2202 or permission of instructor.

6702. **Food Production Internship.** (3). (HMEC 6702-001). Supervised field experience in an area of food production and service. PREREQUISITES: HMEC 3206, 4502 or CSED 3206, 4502.
6712. **Clinical Nutrition Internship.** (3). (HMEC 6712). Supervised field experience in clinical nutrition. PREREQUISITE: HMEC 4102 or CSED 4102.
6722. **Catering Internship.** (3). (HMEC 6702-002). Supervised field experience in catering. PREREQUISITES: HMEC 3602, 4502 or CSED 3602, 4502.
7101. **Master's Seminar in Consumer Science and Education.** (1-3). (HMEC 7101). Seminar designed to offer continuing personal/professional development. To be taken early in the master's program during two consecutive semesters for 1 and 2 credits respectively.
7202. **Current Issues in Foods and Nutrition.** (3). (HMEC 7202). Review and analysis of current research, trends and issues in area of foods and nutrition. PREREQUISITES: HMEC 4402, 4802, or CSED 4402, 4802, and CHEM 4512.
7212. **Applied Nutrition for Health.** (3). (HMEC 7212). Basic principles of nutrition and their applications to health and fitness. Not applicable to nutrition concentration.
7222. **Advanced Therapeutic Nutrition.** (3). (HMEC 7222). Physiological and biochemical bases of nutrition-related diseases and principles of treatment and prevention. PREREQUISITES: HMEC 4402 or CSED 4402, BIOL 1632, CHEM 4512.
7300. **Independent Study in Consumer Science and Education.** (1-3). (HMEC 7300). Opportunity for creative, directed, independent study in a specific area of Consumer Science and Education. Available to provide breadth and/or depth to the student's program of study. PREREQUISITE: Consent of instructor.
- 7312 **Internship in Child Care Services.** (3). (HMEC 7311). Materials, methods, and coordination of work experiences for occupational Home Economics including supervised on-the-job experience in a selected occupational area (Child Care Services) for the teacher. PREREQUISITES: HMEC 2102, 6101, 7393 or CSED 2102, 6101, 7393, or their equivalents.
7313. **Internship in Food Service.** (3). (HMEC 7312). Materials, methods, and coordinating of work experiences for occupational Home Economics including supervised on-the-job experience in a selected occupational area (Food Service) for the teacher. PREREQUISITES: HMEC 2202, 3302, 4202, 6502, 7393 OR CSED 2202, 3302, 4202, 6502, 7393, or their equivalents.
7393. **Seminar in Vocational Home Economics.** (1-3). (HMEC 7393). Analysis of the philosophy, curriculum, operation, and evaluation of Vocational Home Economics programs with scope and direction based on Federal Vocational Legislation and State Department of Education: Rules and Regulations.
7400. **Internship in Consumer Science and Education.** (3-9). (HMEC 7302). Supervised field experience in a selected area of Consumer Science and Education. PREREQUISITE: Permission of Department Chair.
7401. **Internship in Child and Family Studies.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7402. **Internship in Nutrition Education and Food Systems.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7403. **Internship in Home Economics Education.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7404. **Internship in Housing/Home Furnishings.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7405. **Internship in the Fashion Industry.** (3-9) (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7406. **Internship in Marketing Education.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.

7407. **Internship in Nutrition in Mental Retardation and Developmental Disorders.** (3-9). (HMEC 7302). Supervised field experience. PREREQUISITE: Permission of Department Chair.
7412. **Cellular Nutrition I.** (3). (HMEC 7412). Generation, storage, and use of energy; metabolism of carbohydrate, protein, fat, and other macro and micronutrients; control of metabolic processes in normal, anabolic, and catabolic conditions. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements or permission of instructor.
7415. **Clothing Behavior Patterns.** (3). (HMEC 7405). Application of basic concepts from cultural anthropology, sociology, and psychology to the study of the behavioral science aspects of clothing through surveys of pertinent research literature, selected references and periodicals, and related field experiences.
- 7420-29 **Workshops in Consumer Science and Education.** (3). (HMEC 7420-29). Designed to respond to needs and interests of students in Consumer Science and Education. Specific titles of workshops vary.
7422. **Cellular Nutrition II.** (3). (HMEC 7422). Cellular and subcellular metabolism of the micro-nutrients; digestion, absorption, transport, utilization, and excretion of vitamins and minerals; interrelationships of micro- and macronutrients; recent advances in micronutrient research. PREREQUISITE: Student must meet the ADA Didactic Program in Dietetics requirements or permission of instructor.
7432. **Nutrition and the Life Cycle I: Maternal, Infant, and Child Nutrition.** (3). (HMEC 7432). Food, nutrition, and human behavior in the development of individuals from conception through childhood; economic, social, and environmental bases for intervention in development of food habits and modification of diet in treatment and prevention of disease and disability; nutritional assessment methods appropriate for this age span. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements or permission of instructor. COREQUISITE: HMEC 7452 or CSED 7452.
7433. **Nutrition and the Life Cycle II: Adolescent, Adult, and Geriatric Nutrition.** (3). (HMEC 7433). Food, nutrition, and behavior in the life span from adolescence throughout life; economic, social, and environmental bases for intervention in the development of food habits and modification of diet in the treatment and prevention of disease and disability; nutritional assessment methods appropriate for this age span. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements or permission of instructor. COREQUISITE: HMEC 7462 or CSED 7462.
7442. **Clinical Nutrition Administration.** (3). (HMEC 7442). Models and approaches used in the organization and management of health and nutrition clinical and community based programs; entrepreneurial nutrition/dietetics program development; leadership in organizational technology; clinical nutrition research methods; and grant writing. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements. COREQUISITE: HMEC 7472 or CSED 7472.
7452. **Clinical Internship I.** (3). (HMEC 7452). Directed clinical practice in health care settings serving infants, children, and women during pregnancy and lactation. Emphasis on nutrition in normal growth and development, women's health during reproduction, lactation, and social support in achieving health and human development. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements. COREQUISITE: HMEC 7432 or CSED 7432.
7462. **Clinical Internship II.** (3). (HMEC 7462). Directed clinical practice in health care settings serving adolescents, adults, and elderly persons. Emphasis on nutrition in wellness and maintenance of health in aging as well as prevention and treatment of disease and disability and social support in achieving health and human development. PREREQUISITE: Student must meet ADA Didactic Program in Dietetics requirements. COREQUISITE: HMEC 7492 or CSED 7492.

7472. Clinical Internship III. (3). (HMEC 7472). Directed clinical experience in the administration of nutrition services including food service systems, clinical and community nutrition service delivery systems, clinical research programs, and health promotion programs. Includes four-week culminating experience requirement for dietetic internship program. **PREREQUISITE:** Student must meet ADA Didactic Program in Dietetics requirements. **COREQUISITES:** HMEC 7442, 7520 or CSED 7442, 7520.

7482. Clinical Residency. (3). (HMEC 7482). Individualized clinical experience designed at advanced level to enhance self-direction in learning and to develop advanced competence in various areas of foods and nutrition practice and/or management with an emphasis on services delivery, teaching, and research. **PREREQUISITE:** Student must have completed an ADA accredited dietetic internship.

7500-7509. Special Topics in Consumer Science and Education. (1-3). (HMEC 7500-7509). Current topics in areas of Consumer Science and Education. May be repeated with change in content. See *Schedule of Classes* for topic.

7522. Advanced Food Systems Management. (3). (HMEC 7520). Detailed overview of current food service management systems with particular emphasis on hospital system internships. **PREREQUISITE:** HMEC 6502 or CSED 6502.

7600. Entrepreneurship in Consumer Science and Education. (3). Principles involved in initiating, managing, and accepting risks associated with entrepreneurial pursuits as applied to consumer science and education disciplines, e.g. private practice, consulting, technical assistance, and educational services; and operation of shops, day care centers, food service establishments, and boutiques.

7700. Professional Practices in Consumer Science and Education. (3). Adaptation and implementation of current professional strategies with focus on the development of written, verbal, and visual skills.

7800. Consumer Issues: Family Systems Management. (3). Utilizes a systems approach in the analysis of consumer issues from a managerial perspective with emphasis on major family situations across the life cycle.

7900. Study Tour in Consumer Science and Education. (1-3). (HMEC 6900-000). On-the-scene knowledge about general Consumer Science and Education. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7901. Study Tour in Child Development and Family Relations. (1-3). (HMEC 6900-001). On-the-scene knowledge about Child Development and Family Relations. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7902. Study Tour in Foods and Nutrition. (1-3). (HMEC 6900-002). On-the-scene knowledge about Foods and Nutrition. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7903. Study Tour in Family Economics and Consumer Education. (1-3). (HMEC 6900-003). On-the-scene knowledge about Family Economics and Consumer Education. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7904. Study Tour in Housing and Home Furnishings. (1-3). (HMEC 7904). On-the-scene knowledge about Housing and Home Furnishings. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7905. Study Tour in Clothing and Textiles. (1-3). (HMEC 6900-005). On-the-scene knowledge about Clothing and Textiles. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7906. Study Tour in Fashion Merchandising. (1-3). (HMEC 6900-006). On-the-scene knowledge about Fashion Merchandising. **PREREQUISITE:** Permission of instructor. May be repeated. Only 6 hours applicable to degree.

7996. Thesis. (1-6). (HMEC 7996).

MARKETING EDUCATION

The department of Consumer Science and Education offers graduate study leading to a Master of Science degree. Marketing education courses with MKED prefixes are available to provide the 7000 level required collateral.

M773 MARKETING EDUCATION (MKED)

7010. Cooperative Occupational Education. (3). (MKED 6610). Study of occupational education programs which use work experience coordinated with related in-school instruction to provide clear preparation in vocational education. (Spring semester only).

7611. Principles and Philosophy of Vocational Education. (3). (MKED 6611). History, philosophy, principles and objectives of vocational education, curriculum problems, contribution of vocational education to general education; trends and research problems in vocational education.

7620. Administration and Supervision of Vocational Education. (3). For vocational teacher or public school administrator desiring to accept responsibility for supervising vocational education programs at local area or state levels. Includes program design; curriculum construction; classroom supervision; physical layout, administration of supplies, textbooks and equipment; state and federal legislation; accounting and reporting.

7630. Instructional Development in Marketing, Merchandising, and Management. (3). Developing instructional materials and techniques for high school and post-secondary marketing education programs. (Fall semester only.) **PREREQUISITE:** MKED 7010 and 7641.

7641. Techniques of Coordination in Marketing Education. (3). (MKED 6641). Selecting training agencies; developing job analyses; selecting and briefing the training supervisor; selecting and working with advisory committees; utilizing other community and resources.

7642. Development and Supervision of Vocational Student Organizations. (3). (MKED 6680). Aims and objectives of vocational student organizations and their value in occupational preparation; their development, curricular integration operation and evaluation.

7650. Research Problems in Marketing Education. (1-3). Individual investigation and reports of research problems. **PREREQUISITE:** Permission of instructor.

7690-99. Workshops in Marketing Education. (1-9). (MKED 6990-99). Group study of selected phases of the marketing education program, designed to assist both in-service prospective marketing and distributive education teacher-coordinators in improvement of the teaching-learning processes contained in three phases of program operation: classroom instruction, on-the-job training and student organization advisement. See *Schedule of Classes* for topic. May be repeated; however, credit applicable to a degree is limited.

7700. Marketing Education Study Tour. (1-3). (MKED 6700). An opportunity to gain on-the-scene knowledge about specific areas of instruction within marketing education. May be repeated; however, the student should consult with major adviser to determine the maximum credit which may be applied to a degree program. **PREREQUISITE:** Permission of instructor.

†7993. Occupational Experience Practicum. (1-3). Practical experience in occupational specialty area for certification and/or occupational updating; employment in occupational specialty area; comprehensive research report. **PREREQUISITE:** Permission of instructor.

COUNSELING, EDUCATIONAL PSYCHOLOGY AND RESEARCH

MARGARET L. FONG, Ph.D., Chair
and Coordinator of Graduate Studies

I. The Department of Counseling, Educational Psychology and Research offers M.S. and Ed.D. degree programs in Counseling and Personnel Services, and Educational Psychology and Research, and a Ph.D. degree program in Counseling Psychology. Admission to each of these programs is handled separately. Each has its own admission criteria, and application must be made for a particular program before an applicant is considered for that program. Any person admitted to one of these programs who desires to transfer to another program within the department must make formal application to that program and will be evaluated competitively against the same criteria and on the same time schedule as all other applicants for that program.

The departmental objective is to prepare advanced educational leaders to be both sophisticated practitioners and researchers. Programs in Counseling and Personnel Service and Counseling Psychology have a strong scientist-practitioner base. Programs in Educational Psychology and Research have a strong research emphasis. The graduate degrees within the department will qualify students as university and college teachers, counselors, program evaluators, and researchers in educational and counseling environments, as well as provide them with the skills necessary to fill a variety of roles in other settings in which knowledge of human development, learning and cognition, research and evaluation methods is essential.

II. All graduate students within the department will demonstrate generalized competency in core areas of psychological inquiry. Generalized competency may be demonstrated either by passing examinations or completing designated coursework in three of the four general domains:

1. Research methods and data analysis
2. Measurement and evaluation
3. Human development
4. Learning and cognition

III. M.S. Degree Programs

Major: Counseling and Personnel Services

Concentrations:

- Community Agency Counseling*
- Rehabilitation Counseling*
- School Counseling*
- Student Personnel Services*

The Master's degree programs in Counseling and Personnel Services prepare entry level counseling professionals with a broad knowledge base in fundamental social/behavioral science (human development, learning and cognition, personality theory) and emerging research on visible ethnic populations and gender differences), counseling and helping skills (individual and group counseling, and assessment), research and evaluation tools, and professional identity, role, and function.

A. Program Prerequisites

Students need 6 semester hours of course work at the upper division undergraduate or the graduate level in psychological or cultural foundations. The concentration in School Counseling requires a valid teaching certificate.

B. Program Admission

Applicants must apply to the Graduate School and to the program. Only those considered for admission applicants must meet Graduate School requirements, complete the program admissions form, including a 500 word essay, and provide 3 letters of reference. The admissions committee may request a personal interview. Deadline for the completion of all admission requirements is May 1 for Fall, November 1 for Spring, and April 1 for Summer semesters. Program admission forms are available in the department office.

C. Program Requirements

1. All programs are a minimum of 48 semester hours.
2. Demonstrated competency in at least 3 of the 4 department core areas: human development, research methods, assessment, and learning and cognition.
3. M.S. program core (9 hours): COUN 7531, COUN 7551, EDPH 7521 or EDPH 7523.

4. All students are to maintain good standing (B or better grades) in all COU required courses.

5. Concentration requirements:

a. Community Agency Counseling (39 hours): COU 7411, 7541, 7561, 7571, 7630 and EDRP 7117; 19 semester hours forming a focal area within community counseling; practicum COU 7631 (3 hours) and internship COU 7632 (6 hours); 3 hour elective.

b. Rehabilitation Counseling (39 hours): COU 7411, 7541, 7901, 7903, 7911, 7921, 7931; 6 hours of electives approved by advisor; practicum COU 7941 (3 hours) and internship COU 7942 (9 hours). Students wishing to specialize in vocational evaluation must take COU 7935 and 7936.

c. School Counseling (39 hours): COU 7411, 7541, 7542, 7561, 7640, and EDRP 7117; 9 hours of supportive electives; practicum COU 7641 or 7645 (3 hours) and internships COU 7642 and 7646 (6 hours).

d. Student Personnel Services (39 hours): COU 7411, 7541, 7561, 7571, 7622, 7623, and EDRP 7117; 9 hours of supportive electives; practicum COU 7625 (3 hours) and internship COU 7626 (6 hours).

6. All programs include clinical components, practica and internships. Each student's effectiveness will be evaluated by faculty and supervisors. Prior to contact with clients in practicum and internship, students are expected to evidence good judgment and appropriate emotional functioning. Final decisions regarding student effectiveness will be predicated upon factors including course grades, demonstration of clinical competence, personality factors, and any relevant test scores.

7. Written comprehensive examination.

IV. M.S. Degree Programs

Major: Educational Psychology and Research

Concentrations:

Educational Psychology Educational Research

The Master's degree programs in Educational Psychology and Research prepare educational leaders for scholarly expertise with a knowledge base for critical thinking in human development across the life span, cognitive processes applied to education, educational research methods and statistics.

A. Program Admission

Applicants must apply to the Graduate School and to the program. To be considered for admission applicants must meet Graduate School requirements, complete the program admissions form, including a 300-500 word statement of goals and intended areas of concentration, and provide three letters of reference. Deadline for the completion of admission requirements is July 1 for fall, November 1 for spring, and April 1 for summer semesters. Program admission forms are available in the departmental office.

B. Program Requirements

- All programs are a minimum of 36 semester hours.
- M.S. program core (12 credits):
 - Research (6 credits): EDRP 7523 and 7511 or 7541
 - Learning & Cognition (3 credits): EDRP 7121
 - Human Development (3 credits): at least one from EDRP 7111, 7112, 7117
- Concentration in Educational Psychology or Educational Research (15 credits): courses to be taken within the area of concentration will be planned with the major adviser.
- Electives to be taken outside of the major (6 credits)
- Research project/thesis (3 credits-EDRP 7000): Each M.S. student is expected to complete an independent research project or thesis as a culminating experience.
- M.S. Comprehensive Examination: Upon completion of coursework each M.S. degree student will complete a written comprehensive examination covering the domains of research methods and data analysis, measurement and evaluation, human development, and learning and cognition. The exam will be administered by the student's advisory committee and coordinated by the student's adviser. An oral examination may follow if it is deemed necessary by the advisory committee.

V. Ed.D. Degree Programs

Major: Counseling and Personnel Services

The Ed.D. program in Counseling and Personnel Services is designed to prepare advanced professional practitioners in counseling, student personnel services, and counselor education with particular program emphases on multicultural and urban settings. Entry into the program presumes a master's degree in counseling and personnel services wherein one has acquired knowledge and skills in human development, helping relationships, group counseling, lifestyle and career development, assessment techniques, research and evaluation and clinical experiences in applied settings.

The Ed.D. is designed for individuals seeking advanced preparation as educational leaders in the role of professional counselor and researcher and who may seek additional credentials in counselor supervision and counselor education. The Ed.D. is not appropriate for individuals seeking preparation or licensure as a psychologist.

A. Program Prerequisites

A master's degree in counseling that meets CACREP standards for core knowledge and skills. Students with a master's degree in counseling that does not contain all core areas can be considered for admission, but will be required to complete additional coursework prior to enrolling in doctoral level courses.

All applicants need at least six semester hours of graduate work in cultural, historical, or psychological foundations of education.

B. Program Admission

Applicants for admission must complete all Graduate School requirements, an application form, and a personal interview. To be considered for admission applicants must complete the Ed.D. program admission application, provide 4 letters of reference, and submit a 300-1000 word goal statement. The program admissions committee selects students after all application materials and the personal interview are completed. Admission to the program is limited and early application is advised. Deadline for the completion of all admission requirements is July 1 for fall and November 1 for spring semesters.

C. Program Requirements

- Thirty (30) semester hours in the major, including COU 8501, 8510, 8511, 8530, 8750, 8841, and 8885.
- Nine (9) semester hours in research (EDRP 8541, 8542, and a research elective).
- 12 semester hours in a specialty (a specialty area such as counselor education, consultation, program evaluation, etc.).
- 9 semester hours of dissertation.

VI. Ed.D. Degree Programs

Major: Educational Psychology and Research

Concentrations:

Educational Psychology Educational Research

The Ed.D. degree program in Educational Psychology and Research is designed to prepare advanced educational leaders for university teaching, applied research, or other professional roles in the areas of human development (infant, child and adolescent development, adult development and aging), learning (motivation and cognitive processes applied to education), educational research methods and statistics, measurement and program evaluation.

Since the purpose of doctoral-level training is to prepare students to conduct research in a specialized area, individuals with no interest in research should not apply to this major.

Admission to this graduate program is not automatic by meeting minimal admission requirements. The number of students admitted will depend on availability of adequate faculty supervision. All applicants must complete a program application form and be admitted to the Graduate School. Deadline for the completion of all admission requirements is July 1 for fall, November 1 for spring, and April 1 for summer semesters. Program admission forms are available in the departmental office.

A. Program Admission

- Letters of recommendation from at least three persons familiar with the applicant's academic background and aptitude for graduate work, specifying in detail the applicant's capabilities for graduate study and for future performance and scholarship.
- A statement of 500-1000 words indicating the intended area of concentration, the applicant's present interests and career goals, research and applied interests, and prior research and applied experience.
- A willingness to be interviewed by members of the Educational Psychology & Research faculty, should that be required.
- Approval of the Educational Psychology & Research Admissions Committee. Interim advisers are assigned upon admission and serve until the student has completed at least 6 hours. At that time the student selects a major adviser and a four member advisory committee.

B. Program Requirements

- Credit Hours. A minimum of 54 hours of graduate credit beyond the master's degree.
- All students upon admission into the doctoral program need to demonstrate competencies in the four depart-

mental core domains (research methods and data analysis, measurement and evaluation; human development; and learning and cognition) as prerequisites for further coursework. Students may demonstrate their competency by (a) having earned at least a B in each of the entry level courses (EDRP 7523, 7511, 7117, 7121) during their master's program, or (b) by passing proficiency exams. Doctoral students with low proficiency in any of these core domains must complete the appropriate entry level course before more advanced coursework. These entry level courses will not count toward the minimum of 54 hours required.

3. Core (21 credits):

(a) Research (15 credits): EDRP 8541, 8542, 8543, or 8549 or 8561, and at least 6 credits of supervised research EDRP 8081. All doctoral degree students are expected to be active in collaborative research with members of the faculty each semester they are enrolled. This includes the research based residency that must result in a paper submitted to a refereed journal or a refereed professional conference.

(b) Learning & Cognition (3 credits): at least one from EDRP 8149, 8150, 8151.

(c) Human Development (3 credits): at least one from EDRP 8111, 8112, 8113, 8114, 8131, 8161.

4. Concentration in Educational Psychology or Educational Research (12 credits): courses to be taken within the area of concentration will be planned with the major adviser.

5. Electives to be taken outside of the major (9 credits).

6. Comprehensive Examination. Upon completion of coursework each doctoral student will complete a written comprehensive examination covering the domains of research methods and data analysis, measurement and evaluation, human development, and learning and cognition. The exam will place emphasis on the student's area of concentration, will be administered by the student's advisory committee and will be coordinated by the student's adviser. An oral examination will follow the written examination.

7. Dissertation and Final Defense (12 credits-EDRP 9000). A dissertation acceptable to the faculty is a requirement for all doctoral students. The dissertation must embody the results of an extended research effort which is an original contribution to the existing body of research within the area of concentration. The dissertation should reflect the candidate's ability to conduct independent research and interpret in a logical manner the facts and phenomena revealed by the research. Upon completion of the dissertation, each student will orally defend the research undertaken.

VII. Ph.D. Degree Programs

Major: Counseling Psychology

The Counseling Psychology program is fully accredited by the American Psychological Association and prepares psychologists who embody a scientific approach to understanding and working with both specific and general problems in human behavior. The program is interdisciplinary; is organized around the scientist-practitioner model of critical thinking; and is implemented through didactic and experiential activities which emphasize research, development, evaluation, and learning as bases for prevention and remediation that assist persons of all ages and all life styles with improving and optimizing their well-being. The program has sufficient flexibility for students to pursue their own interests.

A. Program Prerequisites (or their equivalent) at the master's level: Group Processes, Assessment/Evaluation, Career Counseling, Counseling Theories, Practicum, Research/Data Analysis.

B. Program Admission

A limited number of applicants are admitted each academic year only for admission in the Fall semester; applications for Spring admission are not considered. All application credentials must be received by January 15 for an applicant to be considered. Candidates must meet the admission standards of the Graduate School and be selected by a Counseling Psychology Committee. An applicant for admission to the Ph.D. counseling psychology program will present a GRE (V & Q) minimum score of 1000, a graduate GPA of at least 3.3/4.0 which includes a masters degree, four letters of recommendation from persons familiar with the applicant's academic record and potential for graduate study in counseling psychology. The program will present a GRE (V & Q) minimum score of 1000, a graduate GPA of at least 3.3/4.0 which includes a masters degree, four letters of recommendation from persons familiar with the applicant's academic record and potential for graduate study in counseling psychology. Students accepted in the program typically have a master's degree in counseling psychology, or related mental health field, as well as substantive counseling experience.

C. Program Requirements

- 15 semester hours in Substantive Psychology including 3 semester hours in each of Biological Bases of Behavior, Social Bases of Behavior, Cognitive-Affective

Bases of Behavior, Individual Behavior, History and Systems of Psychology

2. 6 semester hours in Counseling Psychology Professional Issues, CPSY 8101 & 8201

3. 6 semester hours in Psychometric Theory and Methods, PSYC 8803 & 8804

4. 12 semester hours in Research Methods/Data Analysis, EDPB 8541, 8542, 8543; CPSY 8203

5. 15 semester hours in Counseling, CPSY 8102, 8202; COUN 8721, 8750, 8841

6. Six (6) semester hours in counseling psychology practicum, CPSY 8200. Minimum of 400 clock hours is required.

7. 15 semester hours of Electives in a Concentration

8. 12 semester hours in Dissertation, CPSY 9000

9. 9 semester hours in Predoctoral Internship, CPSY 8890. A full-time one-year internship in Counseling Psychology in an agency approved by the Director of Training is required. The dissertation prospectus must be approved prior to beginning an internship.

D. *Enrollment*

The counseling psychology program is a full-time program of study. Candidates for the Ph.D. degree in counseling psychology are expected to carry a minimum of 9 hours credit per semester.

E. *Professional Competency*

Candidates for the Ph.D. in counseling psychology are specializing in a profession. The Ph.D. degree represents more than the accumulation of the specified number of semester hours credit. The student has responsibility to the public and to the psychology profession to ensure that satisfactory levels of professional and research competencies are attained.

M731 COUNSELING AND PERSONNEL SERVICES (COUN)

COURSES NUMBERED 7000 and above are available only to fully admitted department graduate students and students seeking post-master's professional development.

6150. Interpersonal Skills for Educators. (3), (EDSV 6150). Development of human relation skills to enhance educator's ability to interact effectively with people in educational environments.

6781. Strategies for Crisis Intervention. (3). Survey of processes of crisis intervention. Overview of crisis-induced behavior, crisis situations, and crisis intervention approaches.

6783. Alcohol and Drug Abuse Services. (3). Survey of human services for treating alcoholic and substance persons. Overview of treatment strategies and philosophies.

7006-15. Special Topics in Counseling and Personnel Services. (1-3). Study of current topics in the area of counseling and personnel services. May be repeated with a change in content.

7411. Foundations of Counseling. (3). Introduction to professional roles, responsibilities, and identity of counselor; counseling ethics, credentials, and socio-cultural context of counseling.

7531. Group Counseling Processes. (3). Organization and maintenance of effective groups; group participation, projects and readings to aid students in delineating their roles in various group settings. **PREREQUISITE OR COREQUISITE:** COUN 7411.

7541. Theories of Counseling and Personality. (3), (7581-8581). Person-centered, behavior, cognitive-behavioral, reality, rational-emotive, Gestalt, psychoanalytic, and other appropriate theories. Emphasis on theoretical concepts, principles, and dynamics as applied in practice.

7542. Theories of Child Counseling and Consulting. (3), (7582-8582). Person-centered, behavioral, and related theories. Experiences include exercises in counseling, consulting, and coordinating with a focus on the elementary school.

7551. Assessment Techniques. (3), (7651-8651). The basic principles, test and non-test appraisal instruments, and skills of diagnosis. Selection, use, and interpretation of such instruments appropriate for individual appraisal. **PREREQUISITE:** EDPB7511, 7521, or 7523.

7661. Career Counseling. (3), (7661-8661). Process of career development and planning, career and lifestyle counseling, planning, and development. **PREREQUISITE OR COREQUISITE:** COUN 7411.

7662. Career Development for Children. (3), (7662-8662). The effective use of human resources in the world of work. Selection and use of instructional materials and field experiences related to career development. Exploration of knowledge and skills needed to support career awareness and exploration in grades K-9.

7571-8571. Clinical Techniques. (3), (7690-8690). Implementation and practice of counseling theories; modeling, practice, and critique of counseling skills. **PREREQUISITE:** COUN 7541 or 7542.

7622-8622. College Student Counseling and Development. (3). Study of traditional and non-traditional college students. Emphasis on identification of developmental needs and appropriate counseling approaches.

7623-8623. College Environments. (3). Person-environment interaction theories, campus ecology, impact of college environments on diverse student populations, and higher education environmental assessment techniques. **PREREQUISITE:** COUN 7622.

7624-8624. Seminar in Student Services in Higher Education. (3), (7673-8673). Designed for students in the field of student services in higher education; explores the varied functions and key issues of the student services division.

7625. Practicum in Student Services in Higher Education. (3), (7695-8695). Supervised student personnel experiences in such post-secondary educational settings as admissions, financial aids, student activities, residence life, academic advising, career placement and planning, minority student affairs, and adult student services. 150 hours. **PREREQUISITE:** Program approval.

7626. Internship in Student Services in Higher Education. (4-6), (7948-8948). Supervised student affairs experience in an appropriate student personnel setting in a post-secondary institution. The student will be involved in service activities for a minimum of 300 (or half-time for 4 hours) or 600 (or full-time for 6 hours). May be repeated by half-time students for a maximum of 8 semester hours. **PREREQUISITE:** Program approval.

7630-8630. Counseling in Community Settings. (3). Overview of skills and knowledge unique to mental health counselors in community settings; mental health service delivery, community assessment counseling and assessment for mental disorders, and preventative mental health concepts. **PREREQUISITE:** COUN 7541.

7631. Practicum in Community/Mental Health Counseling. (3), (7892-8892). Supervised counseling experience in a community/mental health setting with varied clientele. The student will be involved in individual and group counseling activities appropriate to the setting. 150 hours. **PREREQUISITE:** Program approval.

7632. Internship in Community/Mental Health Counseling. (4-6), (7698-8698). Supervised counseling experience in an appropriate community/mental health setting. The student will be involved in agency services for a minimum of 300 (or half-time, for 4 hours) or 600 (or full-time, for 6 hours). May be repeated by half-time students for a maximum of 8 semester hours. **PREREQUISITE:** Program approval.

7640-8640. Principles of School Counseling. (3). Organization and administration of components of counseling services in schools, role and function of the school counselor in K-12 system. **PREREQUISITE:** COUN 7411.

7641. Practicum in Elementary School Counseling. (3), (7692-8692). Supervised counseling with elementary age children. Group discussions and individual interviews provide the student opportunities to interact with elementary children in a variety of settings. Fracture in appropriate techniques in interaction with elementary children. 150 hours. **PREREQUISITE:** Program approval.

7642. Internship in Elementary School Counseling. (3-6), (7697). Supervised counseling experience in working with elementary school-aged children in education-based activities. The student will be involved in services for a minimum of 300 (or half-time for 4 hours) or 600 (or full-time for 6 hours). May be

repeated by half-time students for a maximum of 8 semester hours. **PREREQUISITE:** Program approval.

7645. Practicum in Secondary School Counseling. (3), (7691-8691). Supervised counseling with adolescents. Assisted with individuals and groups and practice in providing assistance in educational, occupational, and personal decision making. 150 hours. **PREREQUISITE:** Program approval.

7646. Internship in Secondary School Counseling. (3-6), (7696-8696). Supervised counseling experience in working with adolescents in education-based activities. The student will be involved in services for a minimum of 300 (or half-time for 4 hours) or 600 (or full-time for 6 hours). May be repeated by half-time students for a maximum of 8 semester hours. **PREREQUISITE:** Program approval.

7710-8710. Alcohol/Drug Counseling. (3). Process of counseling alcoholic and drug dependent persons. Modalities of treatment, philosophy of treatment and referral. **PREREQUISITE:** COUN 7541.

7711-8711. Therapeutic Techniques with Substance Abusers. (3), (6784). Conventional methods utilized in treatment of substance abuse, individual and group counseling techniques, residential and out-patient programs. **PREREQUISITE:** COUN 7710 or permission of instructor.

7720-8720. Systems Development for Family Therapy. (3), (7780). Systems theory applied to families as a framework for family therapy; analysis of family systems at different stages of the family life cycle; history of family therapy, research, and professional ethical issues. **PREREQUISITE:** COUN 7541 or permission of instructor.

7721-8721. Theories and Techniques of Family Therapy. (3), (8781). Major approaches to family therapy: structural, Bowenian, strategic, behavioral, communications, experiential, object relations; techniques and assumptions, traditional and current practices. **PREREQUISITE:** COUN 7720 or permission of instructor.

7722-8722. Marital Counseling and Therapy. (3), (8782). Marital counseling and problem situations; phases of therapy, ethical dilemmas, research methodology in couple/family dysfunction. **PREREQUISITE:** COUN 7720 or permission of instructor.

7723-8723. Human Sexuality in Counseling and Psychotherapy. (3). Attitudes, values, beliefs, and theoretical concerns related to human sexuality; counseling strategies for individuals and couples regarding sex-related issues.

7724. Practicum in Marital and Family Therapy. (3-6), (7894-8894). Supervised marital and family counseling experience in an appropriate setting. The student will be involved in services in the setting. 150 hours. **PREREQUISITE:** Program approval.

7725. Internship in Marital and Family Counseling. (3-6), (7944-8944). Supervised marital and family counseling experience in an appropriate setting. The student will be involved in all setting services for a minimum of 300 (or half-time for 4 hours) or 600 (or full-time for 6 hours). May be repeated by half-time students for a maximum of 8 semester hours. **PREREQUISITE:** Program approval.

7730-8730. Crisis Intervention Counseling. (3). Study and practice in understanding crisis theory and crisis-induced dysfunctional behavior, recognizing crisis situations, and the application of crisis intervention methods and strategies to help people in emotional crises return to a state of cognitive, affective, and behavioral equilibrium and functional coping.

7740-8740. Counseling Sexually Victimized Children and Their Families. (3). This course is designed to familiarize students with issues related to counseling sexually victimized children and their families. **PREREQUISITE:** Major in Counseling or permission of instructor.

7750-8750. Multicultural Counseling. (3), (8784). Theory and research on individual and group multicultural counseling with particular attention to ethnic and racial sectors of society in the U.S. **PREREQUISITE:** Major in Counseling or permission of instructor.

7751-8751. Gender Issues in Counseling. (3). (8783). Current issues related to counseling women and men including developmental theory, awareness of sex role socialization and biases, and appropriate approaches to counseling women and men. PREREQUISITE: Major in Counseling or permission of instructor.

7760-8760. Gerontological Counseling. (3). (7882-8882). Counseling and developmental theories applied to the aging. Experience in the use of appropriate individual and group counseling techniques with the aged with emphasis on crisis situations relating to retirement, relocation, dying, death, survivorship. PREREQUISITE: Major in Counseling or permission of instructor.

7761-8761. Midlife and Pre-retirement Counseling. (3). (7883-8883). Processes relating to career and lifestyle review and preparing for retirement. Attitudes, finances, leisure planning, career change or part-time employment. Emphasis on planning and executing pre-retirement programs in business, industry, and social organizations or community agencies. PREREQUISITE: Major in Counseling or permission of instructor.

7770-8770. Consultation Theories and Practices. (3). (7877-8787). Exploration of counselor role as consultant in various settings; development of appropriate skills to interact with client and in applying concepts to practice.

7780-8780. Seminar in Counseling. (1-3). (7672-8672). Devoted to current concerns and methodology in counseling. May be repeated for a maximum of nine semester hours credit. PREREQUISITE: Major in counseling or permission of instructor.

7790-8790. Special Problems in Counseling. (1-3). (7993). Individual investigation and report in the area of counseling under the direction of a faculty member. May be repeated for a maximum of nine hours. PREREQUISITE: Major in Counseling or permission of instructor.

7841-8841. Advanced Counseling Theories and Techniques. (3). (CPSY 7784-8784). Critical analysis of selected theories and techniques of counseling. Emphasis is upon a variety of major theories and systems. Provides a thorough theoretical base for developing a consistent approach to professional counseling. PREREQUISITE: COUN 7541 or 7542 or permission of instructor.

7901. Principles and Techniques of Rehabilitation Counseling. (3). Overview of the broad field of rehabilitation including the philosophical, social, psychological and legal basis of rehabilitation, professional practice and the counselor's role and function in the rehabilitation process.

7903-8903. Psycho-Social Aspects of Rehabilitation. (3). Theories and research in the area of the social psychological adjustment of disability, including related multicultural and urban factors.

7911. Medical Aspects of Rehabilitation. (3). Orientation to the medical profession, its specialties and relationship to rehabilitation; a familiarity with basic medical and clinical terminology, a survey of body systems, their basic functions, malfunctions, and the more common diagnostic and treatment procedures.

7921. Vocational Development and Occupational Information Service. (3). Collection, evaluation and use of occupational, educational and related information in rehabilitation. Familiarity with the development of job descriptions and vocational surveys. Study of labor market trends and theories of occupational choice.

7931-8931. Seminar in Rehabilitation Counseling. (3-9). Designed to address current issues and methods in rehabilitation counseling. May be repeated for a maximum of nine semester hours of credit.

7935. Foundations of Vocational Evaluation. (3). Overview of theory and methods of vocational evaluation. Introduces the student to the role of assessment in the rehabilitation process, current concepts of vocational evaluation, and the various tests used in assessing persons with disabilities.

7936. Techniques in Vocational Evaluation. (3). Applied techniques in administration and interpretation of psychometric tests and work samples used in

assessing persons with disabilities. Includes report writing, test modification and adaptation, and test selection. PREREQUISITE: COUN 7935.

†7941. Practicum in Rehabilitation Counseling. (3). Supervised counseling experiences with persons with disabilities. Application of appropriate theories, principles and practices to personal counseling.

†7942. Internship in Rehabilitation Counseling. (3-9). Supervised field experiences in cooperation with the state rehabilitation agency and other human service agencies and facilities.

†7996. Thesis. (1-6). Prospectus must be approved by the faculty committee directing the research study. Application for writing thesis must be filed with the Director of Graduate Studies.

†8000. Specialist Culminating Experience. (1-6). Thesis, internship, field study, or special project designed under the direction of student's committee. Serves as capstone experience in the Education Specialist Program.

†8091. Teaching in Counseling for Graduate Assistants. (1-3). Overview and practical demonstrations of the art of teaching in counseling and counseling psychology. Restricted to graduate assistants. Credit not applicable to major. May be repeated.

†8092. Research Skills in Counseling for Graduate Assistants. (1-3). Research design, analysis, and methodology in counseling and counseling psychology. Restricted to graduate assistants. Credit not applicable to major. May be repeated.

†8093. Administrative Training for Graduate Assistants. (1-3). Overview and practical demonstrations of administrative skills in counseling, counseling psychology, rehabilitation counseling, or educational psychology and research. Restricted to graduate assistants. Credit not applicable to major. May be repeated.

8501. Doctoral Seminar in Counseling. (1-3). Professional seminar designed for the beginning doctoral students in counseling focussing on the development of professional identity as a leader in counseling; critical philosophical issues; research; new directions in theory and techniques; issues in counselor education and practice. Can be repeated for maximum of three hours.

8510. Counselor Supervision. (3). (CPSY 7786-8786). Critical analysis of theories of counselor supervision, techniques associated with theories, and assessment of those supervision models. Survey of research on counseling supervision issues. PREREQUISITE: Doctoral standing and Program approval.

†8511. Practicum in Counseling and Personnel Services. (3). Supervised experience in appropriate settings. The student will be involved in varied supervision activities as needed. 150 hours. PREREQUISITE: Program approval.

8530. Doctoral Internship in Counseling and Personnel Services. (6-12). (7699/8699). Supervised experience in counseling and personnel services; complements course study with on-site professional experience focused on programmatic, career, and individual student goals. PREREQUISITE: Program approval.

8831. Advanced Group Processes for Counselors. (3). (CPSY 7731-8731). Advanced study of group processes as applied to counseling and student services. Activities, functions, and dynamics of groups will be studied with actual experience and group work included. PREREQUISITE: COUN 7531 and advanced standing in Counseling or permission of instructor.

8885. Legal and Ethical Issues in Counseling. (3). (CPSY 7785-8785). Examination of existing and needed legislation affecting counseling, review of critical court cases, and study of ethical standards of professional counseling organizations. Survey of responsibilities and liabilities. PREREQUISITE: Advanced standing in Counseling or permission of instructor.

†9000. Doctoral Dissertation. (1-9). Credit may be earned over a period of several semesters. The dissertation may be an organized scientific contribu-

tion or a comprehensive analysis of theory and practice in a specific area.

†Grades of S, U, or IP will be given.

M735 COUNSELING PSYCHOLOGY (CPSY)

7700-8700. Diagnosis and Counseling Interventions for Mental Disorders. (3). This course covers the assessment and diagnosis of mental disorders utilizing the DSM-III-R classification system and the common counseling approaches for each of the major mental disorders. Knowledge covered includes current understandings of the etiology, prevention, and treatment of each mental disorder; differential diagnosis using the DSM-III-R manual; counseling approaches and case management; and psychopharmacology. PREREQUISITE: Practicum.

8101. Foundations of Counseling Psychology. (3). (7684-8684). Designed to orient students and initiate their identification with the profession of Counseling Psychology. Topics include history and future of Counseling Psychology; current issues in the field; and introduction to research, legal/ethical and professional standards. PREREQUISITE: Enrolled in CPSY program.

8102. Seminar in Group Counseling and Psychotherapy. (3). (8793). Theoretical-philosophical and research base of group counseling and psychotherapy; supervised application. PREREQUISITE: Doctoral student.

†8200. Counseling Psychology Practicum. (3-6). (8694). Critical analysis of actual counseling interviews; various methods employed for recording and observing counseling sessions such as audio and video tapes and one-way vision screens. PREREQUISITE: Enrolled in CPSY program. May be repeated for maximum of 12 semester hours.

8201. Professional Issues in Counseling Psychology. (3). Focus is on professional identity, Counseling Psychology research, and legal/ethical issues. Professional issues, applications, and reading related to diversity and the urban environment will be emphasized. PREREQUISITE: Enrolled in CPSY program.

8202. Vocational Psychology. (3). (COUN 8769). Analysis of career development theory and research as applied to practice of career counseling; variables affecting career development in diverse populations.

8203. Seminar in Counseling and Personnel Services Research. (3). (7683-8683). Designed to give the advanced graduate student in counseling and personnel services the opportunity to explore present research and research methodology and to begin to carry out research. PREREQUISITE: Fifteen semester hours of credit in counseling or consent of the instructor.

8501. Counseling Psychology Research. (3). (7790-8790). Supervised practice in developing, designing, conducting, writing, and reporting on a variety of investigative formats in counseling research. May be repeated for a maximum of 12 semester hours. PREREQUISITE: Enrolled in CPSY program or consent of the instructor.

8600. Counseling Psychology Seminar. (1-3). Devoted to current concerns and methodology in Counseling Psychology. PREREQUISITE: Doctoral student in Counseling, Counseling Psychology or consent of the instructor. May be repeated for a maximum of nine semester hours.

†8800. Predoctoral Internship in Counseling Psychology. (3-6). (8890). Supervised internship in setting accredited by American Psychological Association, e.g., college counseling center, hospital or medical setting, or mental health clinic. PREREQUISITE: Completion of all coursework, comprehensive examinations, and approval of dissertation topic. May be repeated for maximum of 12 semester hours.

†9000. Doctoral Dissertation. (1-12). Credit may be earned over a period of several semesters. The dissertation may be an organized scientific contribution or a comprehensive analysis of theory and practice in a specific area.

†Grades of S, U, or IP will be given.

M736 EDUCATIONAL PSYCHOLOGY AND RESEARCH (EDPR)

7000. Thesis Research Project (1-6). (EDFD 7000). Thesis or research project that is presented or published, designed under direction of student's committee, and completed while completing M.S. degree; capstone experience for Master's degree program. May be repeated for a maximum of 6 credit hours.

7001-06-8001-8006. Special Topics in Educational Psychology and Research. (1-3). (EDFD 7006-7015-8006-8015). Current topics in educational psychology and research. May be repeated with a change in content.

7008-8008. Directed Readings. (1-3). (EDFD 7008). Individually directed reading; written report required, may be repeated for a maximum of 9 credits. **PREREQUISITE:** Permission of instructor.

†7009-8009. Practicum. (3-6). (EDPS 7109). Supervised experience in application of educational psychology and research principles and procedures for training activities in educational, industrial, or community settings. May be repeated for a maximum of 6 hours. **PREREQUISITE:** Permission of instructor and approval of major adviser.

7081-8081. Supervised Research. (1-6). (EDFD 7081). Collaborative research with faculty within the major to include planning, design, management, analysis, and reporting of research. May be repeated for a maximum of 12 hours. **PREREQUISITE:** Minimum of 12 hours in major and permission of instructor.

†8091. Teaching in Educational Psychology and Research for Graduate Assistants. (1-3). Overview and practical demonstrations of the art of teaching in educational psychology and research. Restricted to graduate assistants. Credit not applicable to major. May be repeated. **PREREQUISITE:** EDPR 7521 or 7523 or permission of instructor.

†8092. Research Skills in Educational Psychology for Graduate Assistants. (1-3). Research design, analysis, and methodology in educational psychology and research. Restricted to graduate assistants. Credit not applicable to major. May be repeated. **PREREQUISITE:** EDPR 7521 or 7523 or permission of instructor.

†9000. Dissertation. (1-12). (EDFD 9000). Independent research for Doctoral degree. Credit may be earned over a period of several semesters.

†Grades of S, U, or IP will be given.

M736 EDUCATIONAL PSYCHOLOGY (EDPR)

7109-8109. Infant Development. (3). (EDPS 7110-8110). Infancy and toddlerhood from developmental research issues perspective; empirical studies and contemporary issues relating to factors influencing infant development.

7110-8110. Early Childhood Development. (3). Advanced study of methodology, variables, and findings from empirical research relating to early childhood development via contemporary developmental research literature.

7111-8111. Child Psychology Applied to Education. (3). (EDPS 7111-8111). Major theories of child psychology and their implications for educational practices with the preschool and elementary school child.

7112-8112. Adolescent Psychology Applied to Education. (3). (EDPS 7112-8112). Advanced study of theories and research on the physical, psychological, social, cognitive, and cultural aspects of adolescent development; implications for education, treatment, secondary school personnel, and others who live and work with adolescents.

7113-8113. Middle and Adult Development. (3). (EDPS 7113-8113). Cognitive, emotional, and psychosocial theories and research on middle age and adult development.

7114-8114. Psychology of Aging. (3). (EDPS 7114-8114). Cognitive and psychosocial developmental

theories of aging and implications for life-span education.

7115. Child Development for Beginning Teachers. (3). (EDPS 7115). Theories and research on the physical, psychological, social, cognitive, and cultural aspects of early childhood and child development with emphasis on implications for preschool and elementary classroom teacher. Open only to students admitted to licensure programs.

7116. Adolescent Development for Beginning Teachers. (3). (EDPS 7116). Theories and research on physical, psychological, social, cognitive, and cultural aspects of adolescent development with emphasis on implications for the secondary schools and secondary teachers. Open only to students admitted to licensure programs.

7117-8117. Life-Span Human Development. (3). Theories and research on the physical, psychological/emotional, social, cognitive, and cultural aspects of human development across the life span.

7121-8121. Learning and Cognition Applied to Education. (3). (EDPS 7121-8121). Major theories of learning and cognition; emphasis on current research and implications and applications for practitioners.

7131-8131. Culturally Diverse Students: Implications for Education. (3). (EDPS 7131-8131). Cultural differences among American student populations; emphasis on family structure, socialization of children, and cultural influences on student behavior.

7132-8132. Personality Variables in Classroom Teaching. (3). (EDPS 7132-8132). Role of teacher and student personality variables as they influence the teaching/learning process.

7149-8149. Seminar in Cognitive Processes Applied to Education. (3). (EDPS 7149-8149). Information processing, computer simulation of intelligence, critical thinking, memory, problem solving of normal and atypical learners with applications made for classroom instruction. **PREREQUISITE:** EDPR 7121.

7150-8150. Motivation. (3). (EDPS 7150-8150). Theoretical and research viewpoints on motivation from cognitive perspective; applications to educational and industrial setting. **PREREQUISITE:** EDPR 7121 or 7149 or permission of instructor.

7151-8151. Individual Differences in Learning. (3). (EDPS 7151-8151). Theoretical foundations of instructional models designed to adapt learning to individuals. Topics include programmed instruction, computer-based instruction, competency-based (PSI) models, token economy systems, peer tutoring strategies, and contemporary theoretical models pertaining to behavior modification, aptitude-treatment interactions, and adaptive instruction.

7161-8161. Moral and Ethical Development. (3). (EDPS 7161-8161). Current theory and research on moral and ethical reasoning and development across the life span and educational implications.

8171. Seminar in Human Development. (3). (EDPS 8171). Research issues in human development; specifically focused on adolescence, midlife, aging, and implications across age groups. **PREREQUISITE:** EDPR 7111, 7112 or 7113 or 7114 or permission of instructor.

M736 EDUCATIONAL RESEARCH (EDPR)

6530. Microcomputers in Education: Theoretical and Technical Foundations. (3). (EDRS 6530). History, development, and status of microcomputers in education and introduction to technical knowledge and skills needed to operate microcomputers for specialized educational applications. Course is designed to provide prerequisite knowledge for more advanced computer-related training in different educational specialty areas.

7511-8511. Measurement and Evaluation. (3). (EDRS 7511). Test construction, test statistics, and interpretations and applications of standardized test results.

7512-8512. Psychometric Theory and Educational Application. (3). (EDRS 7512-8512). Psychometric principles and applications to tests, rating scales,

questionnaires and other standardized instruments used in educational research; problems associated with evaluation of items and instruments in terms of reliability and validity. **PREREQUISITE:** EDPR 7511 and 7541 or permission of instructor.

7513-8513. Development of Assessment Instruments. (3). (EDRS 7513-8513). Desired characteristics of tests and their development; designing content and item specifications, item construction, forms development, and reporting considerations. **PREREQUISITE:** EDPR 7511 or permission of instructor.

7514-8514. Administration of Assessment Programs. (3). (EDRS 7514-8514). Overview of large scale, district or state-wide testing programs; planning assessment program, contracting, selections, and training of subordinate administrators, test scoring software and procedures, security arrangements, and reporting of test results. **PREREQUISITE:** EDPR 7511 or permission of instructor.

7521-8521. Introduction to Educational Research. (3). (EDRS 7521). Introduction to major concepts and processes underlying educational research. Focus on knowledge necessary for critically appraising published research and preparing students as research consumers.

7522-8522. Advanced Educational Research. (3). (EDRS 7522-8522). Philosophical aspects of the scientific method in education; functions of paradigms, theories and models in inquiry; theory development and validation; major types of analytical, qualitative and descriptive inquiry appropriate to the study of educational phenomena. **PREREQUISITE:** EDPR 7521 or 7523, and 7541, or permission of instructor.

7523-8523. Applied Educational Research. (3). (EDRS 7523-8523). Conducting and interpreting research concerned with learning and teaching. Statistical and research methods, interpretation of literature, report writing, and development of proposal for research project.

7531-8531. Computer as a Research Tool. (3). (EDRS 7531-8531). Computer applications to research processes in education and the behavioral sciences, capabilities and limitations of computers in analysis of educational data; experience in the utilization of various (statistical) library programs. **PREREQUISITE:** Introductory statistics and programming or permission of the instructor.

7541-8541. Statistical Methods Applied to Education I. (3). (EDRS 7541-8541). Utilization and interpretation of statistical methods applied to education. Topics include frequency distributions, central tendency, variability, correlation, linear regression, introduction to probability, normal distribution, interval estimation, hypothesis testing via t-test and chi-square and computer utilization in statistical analysis. **PREREQUISITE:** EDPR 7521 or 7523 or permission of instructor.

7542-8542. Statistical Methods Applied to Education II. (3). (EDRS 7542-8542). Includes one-way and two-way analysis of variance, a priori and post hoc tests of significance and an introduction to multiple linear regression. Emphasis is placed on student acquisition of practical intermediate univariate analytic and interpretive skills. **PREREQUISITE:** EDPR 7541 or permission of instructor.

7543-8543. Research Design and Analysis. (3). (EDRS 8543). Includes validity of research designs, complex analysis of variance, and analysis of covariance; emphasis is on practical advanced univariate and analytic and interpretive skills. **PREREQUISITE:** EDPR 7542 or permission of instructor.

7551-8551. Introduction to Evaluation Systems. (3). (EDRS 7551-8551). Examines procedures and problems in utilization of evaluation and in identifying its purposes; treats the functions and methods of evaluation especially as affected by organizational behavior and political influences. Evaluation methodology includes but is not limited to design considerations, data utilization, and concepts and methods of needs assessment. **PREREQUISITE:** EDPR 7521 or 7523 or permission of instructor.

7561-8561. Qualitative Methods in Education. (3). (EDRS 7561-8561). Issues, procedures, and prob-

lems of conducting qualitative research in educational settings. PREREQUISITE: EDPH 7521 or 7523 or permission of instructor.

7572-8572. Institutional Research in Education. (3). (EDRS 7572-8572). Techniques of institutional analysis in designing self-studies, evaluating the teaching and learning environment and institutional planning. PREREQUISITE: EDPH 7521 or 7523 or permission of instructor.

8519. Seminar in Educational Measurement. (3). (EDRS 8519). Systematic investigation of advanced topics in the field of educational measurement. A prior course in educational statistics is recommended.

8529. Seminar in Research Applications for Educators. (3). (EDRS 8529). Systematic investigation of advanced educational research applications. PREREQUISITE: permission of instructor.

8549. Multivariate Methods in Education. (3). (EDRS 8549). Systematic investigation of current multivariate methods in the field of educational statistics. PREREQUISITE: EDPH 7542 or permission of instructor.

†Grades of S, U, or IP will be given.

HUMAN MOVEMENT SCIENCES AND EDUCATION

RALPH C. WILCOX, Ph.D., Chair
JEBOSE OKWUMABUA, Ph.D.,
Coordinator of Graduate Studies and
Research

I. The Department of Human Movement Sciences and Education offers a Master of Science degree program in Exercise Science and Health Promotion. Concentrations are offered in Exercise and Sport Science, and Health Promotion.

II. M.S. Degree Program

A. Program Prerequisites

1. Meet University requirements for admission to Graduate School.

2. Completion of academic deficiencies in course work if, after faculty evaluation of transcripts, it is deemed necessary.

B. Program Requirements

A minimum of 39 hours is required of all students.

1. Program Core (15 hours): EDPH 7523, EDPH 7541, EXSS 7900 or HPRO 7900, HMSE 7183, and HMSE 7403.

2. Concentration requirements:

a. Exercise and Sport Science (15 hours): EXSS 7123, 7163, 7201, 7202, and 7800.

b. Health Promotion (15 hours): HPRO 7182, 7183, 7712, 7722, and 7800.

3. Guided electives selected with approval of the adviser:

a. Exercise and Sport Science concentration (choose 6 hours): BIOL 6151, 6620, 6630, 6503, 6511, 6504, 6512, 7005, 7010, 7031, CSED 7212, EDPH 7531, EXSS 6406, 6902-11, 7152, HPRO 7712.

b. Health Promotion Concentration (choose 6 hours): CSED, EDPH 7710, EXSS 7201, 7202, HAD 7255, HPRO 7702, 6902-11, 7152, EDT 7073, SOCI 6541, 7851.

4. Culminating Experience (3 hours): HMSE 7996 (Thesis) or EXSS 7950 (Exercise and Sport Science concentration) or HPRO 7950 (Health Promotion concentration).

5. Successful completion of an oral comprehensive examination.

M740 HEALTH PROMOTION (HPRO)

6902-11. Special Topics in Health Promotion. (3). Current topics in health promotion. May be repeated with change in topic. See Schedule of Classes for topic.

7152. Special Problems in Health Promotion. (3). Independent study and/or research project on selected health problems or issues. Prerequisite: Permission of instructor.

7182. Health Promotion. (3). (FITW 7182). Development of health promotion programs in community and corporate settings, including assessment of pro-

gram development, selection of personnel, administrative procedures, evaluation procedures, marketing techniques, and legal issues.

7183. Health Promotion Assessment. (3). (FITW 7195). Techniques and procedures for assessing health-related components of physical fitness.

7702. Critical Health Issues. (3). (HLTH 7702). Examination of current health issues and problems with emphasis on roles of parents, teachers, administrators and community personnel.

7712. Epidemiology. (3). (HLTH 7712). Introduction to selected diseases of special concern in public health practice with emphasis on epidemiologic models and methods. Prerequisite: Introductory statistics, HLTH 7802, EDRS or EDPH 7521, or permission of instructor.

7722. Health Intervention Theories and Applications. (3). (HLTH 7722). Examination of an array of health theories and their applications to relevant health problems and prevention-intervention programs. These theoretical frameworks will be critiqued in some depth.

7800. Internship in Health Promotion. (3-6). Laboratory experience focusing on development of knowledge, skills and techniques needed to function as health promotion specialist in public or private settings.

7900. Problem Identification and Research Planning Seminar. (3). The methodology involved in planning, conducting, analyzing, and reporting research associated with health promotion. Prior to completion of the course, specific proposals must be approved by the designated committees for the following: research prospectus; informed consent form if human subjects are to be used in the investigation. Prerequisite: Permission of instructor.

7950. Applied Project in Health Promotion. (3). A functional study of a topical problem in health promotion which significantly relates to the student's professional goals. Prerequisite: Permission of instructor.

M750 EXERCISE AND SPORT SCIENCE (EXSS)

6406. Electrophysiology and EKG Interpretation Seminar. (3). An introduction to the electrophysiology of muscle cells with an emphasis on cardiac cells. Mechanics and interpretation of EKG are covered.

6902-11. Special Topics in Exercise and Sport Science. (3). Current topics in Exercise and Sport Science. May be repeated with change in topic. See Schedule of Classes for topic.

7123. Mechanical Analysis of Motor Skills. (3). (PHED 7123). Experiences which will enhance the understanding and practical application of the laws of mechanical physics to the fundamental techniques utilized in the performance of physical activities.

7152. Special Problems in Exercise and Sport Science. (3). Independent study and/or research project on selected problems and issues in Exercise and Sport Science. Prerequisite: Permission of instructor.

7163. Advanced Motor Learning. (3). (PHED 7163). Investigation of research as it relates specifically to the acquisition of motor skills. Emphasis placed upon such variables affecting skill acquisition as: motivation, distribution, length and methods of practice; feedback mechanisms; and the retention and transfer of skills.

7201. Physiology of Exercise: Musculoskeletal Aspects. (3). An analysis of both the physiological bases of musculoskeletal performance as well as specific adaptations which occur consequent to various regimens of exercise. Instruction is selected techniques for assessing musculoskeletal function and structure. Prerequisites: EDPH 7523, EDPH 7541, EXSS/HPRO 7183.

7202. Physiology of Exercise: Metabolic/Cardio-respiratory Aspects. (3). An analysis of the acute and chronic metabolic/cardiorespiratory bases of human performance and fitness under various internal and external environmental conditions. Instruction in selected techniques for assessing metabolic/car-

diorespiratory function and structure. Prerequisites: EDPH 7523, EDPH 7541, EXSS/HPRO 7183.

7800. Internship in Exercise and Sport Sciences. (3). Laboratory experience focusing on development of knowledge, skills and techniques needed to function as Exercise and Sport Science specialist in public or private settings.

7900. Problem Identification and Research Planning Seminar. (3). The methodology involved in planning, conducting, analyzing, and reporting research associated with exercise and sport sciences. Prior to completion of the course, specific proposals must be approved by the designated committees for the following: research prospectus; informed consent form if human subjects are to be used in the investigation. Prerequisite: Permission of instructor.

7950. Applied Project in Exercise and Sport Sciences. (3). A functional study of a topic or problem in exercise and sport sciences which significantly relates to the student's professional goals. Prerequisite: Permission of instructor.

M755 HUMAN MOVEMENT SCIENCES AND EDUCATION (HMSE)

7183. Physical Fitness and Health. (3). Focuses on research pertaining to the relationship of physical exercise to the cardiovascular system, cardiovascular disease, longevity, weight control and relaxation. Physical work capacity, percent body fat, flexibility and other factors are measured.

7403. Measurement and Evaluation in Human Movement Sciences. (3). (PHED 7403). Includes selection, application and evaluation of certain tests appropriate to the Human Movement Sciences.

7996. Thesis (3). (FITW/HLTH/PHED/RECR 7996). Application for writing a thesis must be filed out on an approved form after consultation with the major professor and filed with the Director of Graduate Studies.

M760 SPORT AND LEISURE COMMERCE (SLC)

7100. Managing Leisure and Sport Areas and Facilities. (3). Advanced management and operation of leisure and sport areas and facilities. Emphasis on comprehensive planning, design, maintenance, and inspection of areas and facilities.

7201. Women in Sport and Leisure. (3). Survey of the history of women in sport with emphasis on the American athlete; interscholastic, intercollegiate, commercial, club, and international competitions; issues affecting growth of sports programs and achievements of females in sport.

7331. Sport and Leisure in Contemporary Society. (3). Nature and function of sport and leisure in contemporary American settings with a sociocultural context. Sport and leisure related issues pertaining to racial minorities, politics, status, consumerism, subgroups, aggression and financial matters are examined.

7332. Foundations of Sport and Leisure Commerce. (3). Influence of historical, philosophical, and social elements upon sport and leisure management policies, practices, and programs. Prerequisite: Fully admitted students in Sport and Leisure Commerce program.

7341. Commercial Recreation and Travel Tourism. (3). Survey of commercial leisure services with special emphasis placed on travel and tourism; sports and athletics, theaters, fitness centers, amusement and theme parks, aquatic areas, risk recreation, and historical areas, and the travel and tourism industry. Prerequisite: Fully admitted in the Sport and Leisure Commerce program.

7403. Sport and Leisure Programs for Special Populations. (3). (PHED 7402). Examination of the special needs of people with disabilities regarding sport participation and management implications for recreation professionals.

7600. Current Readings in Sport and Leisure. (3). (RECR 7135 or PHED 7133). Directed readings in the area of sport and leisure. Materials related to strengthen areas of study.

7603. Administration of Athletics. (3). Representative athletic administration procedure for colleges,

public school systems, and municipal athletic leagues, fiscal procedures and business management.

7605. Practicum in Sport and Leisure Commerce. (3). (RECR 7605). Field experiences providing an opportunity for practical application of classroom theory. A range between 140 and 420 clock hours in professional field work in selected sport and leisure settings according to student's particular area of emphasis.

7900. Problem Identification and Research Planning Seminar. (3). The methodology involved in planning, conducting, analyzing, and reporting research associated with sport and leisure. Prior to completion of the course, specific proposals must be approved by the designated committees for the following: research prospectus; informed consent form if human subjects are to be used in the investigation. Prerequisite: Permission of instructor.

7950. Special Project in Sport and Leisure Commerce. (3). A functional study of a topic or problem in sport and leisure which significantly relates to the student's professional goals. Prerequisite: Permission of instructor.

INSTRUCTION AND CURRICULUM LEADERSHIP

CAROLE L. BOND, Ph.D.,
Coordinator of Graduate Studies

I. The Department of Instruction and Curriculum Leadership offers graduate programs leading to the Master of Science, Master of Arts in Teaching, and Doctor of Education degrees. At the M.S. and Ed.D. levels concentrations are offered in early childhood, instructional design and technology, instruction and curriculum, reading, and special education. Students choosing the concentration of Instruction and Curriculum can elect in depth studies in the areas of: elementary education, secondary education, school library licensure, or curriculum development. At the M.A.T. level concentrations are offered in early childhood, elementary education, secondary education, and special education. Students choosing special education will choose one of three licensure areas: modified, comprehensive, or pre-school. All programs designed for certification are approved by the National Council for the Accreditation of Teacher Education. (NCATE)

II. M.S. Degree Program

A. Program Admission

Students must meet the admission standards of the Graduate School. Upon admission to the Graduate School, students must apply to the Department of Instruction and Curriculum Leadership. Deadline for completion of admission requests is August 1 for the fall semester, December 1 for the spring semester, and May 1 for the summer semester.

B. Program Prerequisites

The student must present one of the following: acceptable scores on the Miller's Analogy Test or the Graduate Record Examination.

C. Program Requirements

1. A minimum of 36 semester hours is required.
2. The major will consist of 18-21 semester hours in addition to ICL 7059 Models of Instruction.
3. Electives - 6-9 semester hours. Courses taken depend on the undergraduate background, previous experiences of the student, and the nature of the major area of concentration. These courses must be approved as supporting the major area of study.
4. EDPR 7521 or 7523 and 3 semester hours in cultural, historical, or psychological foundations in education.

III. M.A.T. Degree and Licensure Program

The M.A.T. degree is available for students who wish to qualify for initial licensure and for students wishing to add licensure in one or more areas. Both full and part time programs are offered. A program is also available to those who seek licensure but do not wish to pursue a graduate degree. Both programs prepare Early Childhood, Elementary, Secondary, or Special Education teachers.

A. Program Admission of M.A.T. and Licensure Program
Deadline for completion of admission requests is August 1 for the fall semester, December 1 for the spring semester, and May 1 for the summer semester.

Candidates seeking admission to the Graduate Teacher Preparation Program must apply for admission to the Teacher Education Program (TEP) prior to or during the first semester of course work. Students who do not apply to TEP will not be allowed to continue in the program. Students will submit a portfolio to the Teacher Education Admission Committee to document the following admissions requirements:

1. Bachelor's degree from an accredited college
2. Sufficient coursework to permit licensure in a teaching field
3. Completion of an appropriate general education curriculum
4. M.A.T. students must be admitted as graduate master's degree students.
5. Licensure program students may be admitted as a graduate master's or graduate non-degree student.
6. Formal application to the Teacher Education Program (TEP).

7. 2.50 overall GPA, or 3.00 in the teaching area, or 2.75 for last 60 semester hours credit

8. Acceptable scores on the Miller Analogies Test or the Graduate Record Examination
9. Evidence of proficiency in written and oral communication
10. Successful completion of personal interview
11. Acceptable scores on other required tests

B. Program Requirements

1. For students seeking licensure and the M.A.T. degree, a minimum of 43 semester hours is required. Minimum hours may increase depending on licensure requirements fulfilled by undergraduate studies and specific area of licensure.

The students must satisfy requirements in General Education and must have met, or will have met upon completion of the program, the undergraduate requirements or their graduate equivalents in the field of study in which the student is seeking licensure.

Students seeking licensure through the Master of Arts in Teaching program must refer to undergraduate catalog requirements and procedures for admission to the Teacher Education Program and for student teaching and confer with the College of Education general adviser concerning requirements for licensure. Students must make formal application for admission to the Teacher Education Program immediately upon entering the program. Application for student teaching must be made one calendar year in advance or upon admission to the program.

2. Licensure in Tennessee requires acceptable scores on the NTE Core and Specialty Examinations.

3. Students seeking Early Childhood licensure (PreK-3) and the M.A.T. degree must complete the following requirements:
 - a. Early Childhood (PreK-3) Licensure Requirements: ECED 6510, 6520, 6530, 6540; ICL 7000, 7048 (2 hours), 7706, 7804 (9 hours), 7993 (1 hour); RDNG 7549; EDPR 7109, 7110; LEAD 6000; SPED 7000.

4. Students are required to complete a minimum of 60 clock hours of structured field experience in pre-K-3 settings prior to student teaching. These field experiences will be incorporated into licensure requirement courses.

c. M.A.T. Degree requirements in addition to (a) and (b) above: ICL 7059, 7001, EDPR 7521 or 7523; and either a thesis (ICL 7996-3 hours) or special project (ICL 7992-3 hours).

4. Students seeking Elementary Licensure (1-8) and the M.A.T. degree must complete the following requirements.

a. Elementary Licensure (1-8) Requirements: ICL 7000, 7048 (2 hours), 7705, 7706, 7850, 7600, 7500, 7806 (9 hours), 7993 (1 hour); RDNG 7549, 7550, SPED 7000; EDPR 7115.

b. Students are required to complete a minimum of 60 clock hours of field experience in elementary school settings prior to student teaching. These field experiences will be incorporated into licensure requirement courses.

c. M.A.T. Degree requirements in addition to (a) and (b) above: ICL 7059, 7001, EDPR 7521 or 7523; and either a thesis (ICL 7996-3 hours) or special project (ICL 7992-3 hours).

5. Students seeking Secondary Licensure (5-12) and the M.A.T. degree must complete the following requirements.

a. Secondary Licensure Requirements: ICL 7000, 7048 (2 hours), 7705, 7706, 3 hours of appropriate methods course 7303, 7330, 7502, 7602 or 7652, 7807 or 7808 (9 hours), 7993 (1 hour); RDNG 7544, SPED 7000, LEAD 6000, EDPR 7116

*RDNG 7549 is a requirement for those seeking licensure in English.

b. Students are required to complete a minimum of 60 clock hours of field experience in secondary school settings prior to student teaching. These field experiences will be incorporated into licensure requirement courses.

c. M.A.T. Degree Requirements in addition to (a) and (b) above: ICL 7059, 7001, EDPR 7521 or 7523; and either a thesis (ICL 7996-3 hours) or special project (ICL 7992-3 hours).

6. Students seeking Special Education Licensure and the M.A.T. degree must complete the following requirements.

a. Special Education core: EDPR 7115, SPED 7000, 7001, 6900, 7221, 7241 (9), 7010.

b. Licensure areas (choose one or more):

(1) Modified (K-12): SPED 7211, 7041, RDNG 7549, and one of the following: SPED 7411, 7222, 7511, 7513.

(2) Comprehensive (K-12): SPED 7601, 7611, 7621, 7042.

(3) Preschool: SPED 7101, 7121, 7621, 7141.

c. M.A.T. Degree Requirement: In addition to (a) and (b) above: ICL 7059, 7001, EDPR 7521 or 7523; and either a thesis (ICL 7996-3 hours) or special project (ICL 7992-3 hours).

IV. Ed.D. Degree Program

A. Program Admission

1. After being admitted to the Graduate School, the student must make formal application to the Department of Instruction and Curriculum Leadership. Each prospective student will complete a doctoral application file and schedule interviews with faculty members. The doctoral application file will minimally include: transcripts, GRE scores, letters of recommendation, and evidence of writing, such as a scholarly paper. The doctoral application file must be completed before an interview will be scheduled. Interviews must be completed prior to the University deadlines. Those deadlines are August 1 for the fall semester, December 1 for the spring semester, and May 1 for the summer semester.

2. Each student's file will be evaluated prior to full admission to the Department of Instruction and Curriculum Leadership. Only those files which are completed by the admission deadline will be considered.

3. Applicants whose native language is other than English must score at least 550 PR on the Test of English as a Foreign Language (TOEFL).

4. The above represent the minimal acceptable admission requirements. Depending on the applicant's educational background, the graduate committee may require additional coursework to prepare the student for doctoral studies.

B. Program Requirements

1. Students who have not completed at least six semester hours of graduate level mode one course work in cultural, historical, or psychological foundations of education, must complete those hours during the first year of enrollment in the doctoral program. These prerequisites will not be counted toward the degree.

2. A minimum total of 54 hours post master's hours.

3. The major will consist of 42-45, with 9-12 hours of dissertation credit (ICL 9000) and 3-6 hours of doctoral seminar (ICL 8995).

4. The research requirement will consist of 9-12 hours. EDPR 7541 and 7542 are required. The remaining hours should consist of courses directed toward research and/or statistical techniques and procedures necessary for the discipline and the dissertation topic.

5. Approved transfer credit or post-master's courses may be accepted for not more than 12 semester hours.

6. Completion of the college and university residency requirements.

Additional information pertaining to the major and concentration areas may be secured from the Chair or Graduate Coordinator of the Department of Instruction and Curriculum Leadership.

M652 INSTRUCTION AND CURRICULUM LEADERSHIP (ICL)

NOTE: Course numbers at the end of the title are former numbers. If the course has been taken under this former number, it may not be repeated unless so specified.

CURRICULUM (ICL)

5501. Academic Content for Teaching, (1-9), (CIED 5501). Academic content areas in disciplines support of school curriculum. May be repeated to remove deficits for teacher licensure and with change of content. (Offered fall and spring semesters.)

6761. Aerospace Education in Schools. (3). (CIED 6761). Consideration of aerospace content and flight experiences. Emphasizes classroom applications. (Offered summer semester.)

6762. Advanced Aerospace Education in Schools. (3). Theory, principles, and practices related to the historic development of aerospace, with emphasis on both civilian and military uses of aerospace capabilities; appropriate utilization of aerospace research, concepts, and "spinoffs" for instructional purposes at all grade levels. PREREQUISITE: ICL 6761.

7001. Fundamentals of Curriculum. (3). (CIED 7001). Principles of organizing and developing the curriculum and curriculum directions, trends, and patterns. (Offered fall, spring, and summer semesters.)

7002-8002. Curriculum Leadership. (3). (CIED 7002-8002). Application of curricular and leadership theory to modern educational practices; emphasis on developing leadership styles to ensure implementation. (Offered fall, spring, and summer semesters.)

7003-8003. Curriculum Design and Evaluation. (3). (CIED 7003-8003). Considers a variety of curricular designs and their implications for educational practice. (Offered summer semester.)

7004-8004. Innovative Curricula: Development and Implementation. (3). (CIED 7004-8004). Generic issues, problems, processes, and strategies relative to changes occurring with the implementation of innovative curricula. PREREQUISITES: CIED 7002, 7050, ICL 7002, 7050. (Offered summer semester.)

7008-8008. Seminar in Curriculum Improvement. (3). (CIED 7008-8008). An introduction to curriculum decision making. Includes curriculum development as a social process, issues and trends, theories and techniques of curriculum leadership, and translations of curriculum designs into practice. (Offered fall semester.)

M654 INSTRUCTIONAL DESIGN AND TECHNOLOGY (ID&T)

7048. Media and Technology Utilization. (2). (CIED 7048). Introduction to application of instructional technology to education; traditional media as well as emerging technologies. (Offered fall and spring semesters.)

7051-8051. Simulation. (1-3). (CIED 7051-8051). Surveying, analyzing, and designing simulation activities appropriate for classroom situations, individual and group participatory activities.

7052-8052. Individualizing Instruction. (3). (CIED 7052-8052). Analyzing various paradigms for individualizing instruction. Emphasis will be placed on designing, developing, evaluating, and managing alternative models. (Offered spring semester.)

7060-8060. Microcomputers and Learning. (3). (CIED 7060-8060). Microapplications in the instructional process, including use of software, designing instructional programs, classroom management, use in training programs, overcoming microcomputer anxiety and creative uses for microcomputer in learning. (Offered fall, spring, and summer semesters.)

7070. Preparation of Instructional Materials. (3). (CIED 7070-8070). Design, preparation, and utilization of media and instructional materials; laboratory practice includes development and utilization of projected, non-projected, and computer-based materials. (Offered fall semester.)

7071-8071. Principles and Applications of Instructional Design. (3). (CIED 7071-8071). Application of instructional design principles to solve performance and instructional problems in educational and non-educational environments. (Offered fall and summer semesters.)

7072-8072. Advanced Instructional Media Production. (3). (CIED 7072-8072). Analysis and application of perceptual and learning principles to design and development of instructional media for use in educational and training applications. PREREQUISITE: CIED 7071-8071. ID&T 7071-8071 or permission of instructor. (Offered spring semester.)

7073-8073. Developing Interactive Instruction. (3). (CIED 7073-8073). Application of instructional de-

sign principles to design and development of interactive instruction using various instructional technologies. (Offered fall semester.)

7074-8074. Theories and Models of Instructional Design. (3). A critical examination of existing instructional design theories from the perspective of supporting research and application. PREREQUISITES: ID&T 7071-8071 and a research or statistics course.

7075-8075. Instructional Consulting. (3). Application of interpersonal skills when working with subject matter experts and clients of design, development, and production of instructional materials. PREREQUISITE: ID&T 7071-8071

7076-8076. Seminar and Workshop Design. (3). Technical and theoretical principles for developing effective seminars and workshops. Design, preparation and implementation skills are developed for effective adult learning. PREREQUISITES: ID&T 7071-8071 and research or statistics course.

7078-8078. Seminar in Instructional Design and Technology. (3). (CIED 7078-8078). Professional and research problems in instructional strategies, design, and technology. PREREQUISITE: Permission of instructor. May be repeated once with a change in topic. (Offered spring semester of odd year.)

M649 EARLY CHILDHOOD EDUCATION (ECED)

6107. Workshop in Montessori Instruction. (3). (CIED 6107). Analysis and application of Montessori principles of learning, teaching, sequence and use of didactic materials and classroom organization. Active student participation included. (Offered summer semester.)

6510. Early Childhood Education Programs and Practices. (3). Applying professional knowledge to early childhood education values and principles, programs and practices, issues, problems, and trends; and exploring early childhood teacher roles and responsibilities through observations in multi-cultural early childhood program settings.

6520. Planning and Facilitating Social Learning and Development. (3). Course focuses on planning, implementing, and evaluating programs to facilitate young children's social learning and development from birth through age 8. Socialization and social science skills, knowledge, and dispositions will be addressed in the context of integrating instruction and learning with children's literature, art, music, mathematics, science, etc.

6530. Planning and Facilitating Math and Science Learning and Development. (3). This course provides prospective teachers with the knowledge skills, and dispositions necessary to plan for and facilitate development and learning of physical, logic-mathematical, and social knowledge of mathematics and science for children from birth through eight years.

6540. Planning and Facilitating Infant and Toddler Development. (3). Models, principles, curriculum and practices of developmentally appropriate infant-toddler care giving; emphasis on the teacher's knowledge, skills and dispositions necessary to plan and facilitate the development of infants and toddlers in group care settings.

7100-8100. Values and Principles of Early Childhood Education. (3). (CIED 7100-8100). Current curricula, trends, and issues related to early childhood education. (Offered fall semester.)

7101-8101. Nursery, Kindergarten and Primary Teaching. (3). (CIED 7101-8101). Innovative methods and techniques for teaching nursery, kindergarten, and primary children. (Offered spring and summer semesters.)

7103-8103. Literacy Development in Early Childhood. (3). (CIED 7103-8103). Analysis of role of play in young children's development and learning from birth through age eight; developmentally appropriate applications to young children's literacy learning. (Offered spring semester.)

7104-8104. Play and Early Childhood Development. (3). (CIED 7104-8104). Analysis of role of play in young children's development and learning from

birth through age eight; developmentally appropriate applications of play theory and research to young child's physical, intellectual, language, social, and emotional development and learning. (Offered summer semester.)

7105-8105. Piaget in Early Childhood Education. (3). (CIED 7105-8105). Piaget's early childhood development patterns and the implication for classroom instructional practices. (Offered spring semester of even year.)

7106-8106. Montessori in Early Childhood Education. (3). (CIED 7106-8106). Montessori theory, philosophy, pedagogy, and didactic apparatus and research. Analysis of past and current research of Montessori programs. (Offered summer semester of odd year.)

7108-8108. Seminar in Early Childhood Education. (3). (CIED 7108-8108). Analysis of contemporary issues and trends in the field of early childhood education. May be repeated for a maximum of 6 hours of credit. (Offered fall semester of odd year.)

M652 ELEMENTARY EDUCATION (ICL)

7130-8130. Elementary School Curriculum. (3). (CIED 7130-8130). Analysis of curriculum theories, materials, and practices as they affect the child's potential and growth. (Offered spring semester of even year.)

7138-8138. Seminar in Elementary Education. (3). (CIED 7138-8138). Analysis of contemporary issues and trends in elementary education. (Offered spring semester of odd year.)

M652 SECONDARY EDUCATION (ICL)

7160-8160. Modern Methods in Secondary Education. (3). (CIED 7160-8160). Secondary school teaching and how the secondary school can perform its role most effectively.

7168-8168. Seminar in Secondary Education. (3). (CIED 7168-8168). Analysis of problems, current issues, and trends in secondary education.

7170-79. Specialized Teaching Methods. (2). (CIED 7170-79). Objectives and philosophy of subject field as applied to secondary education; consideration of issues and research in content area; examination of curricular scope and sequence; application of adaptive and unique instructional strategies and methods to specific area; examination, selection and utilization of curricular and instructional materials.

7170. Specialized Methods in English Education. (2). (CIED 7170). (Offered fall semester.)

7171. Specialized Methods in Mathematics Education. (2). (CIED 7171). (Offered fall semester.)

7172. Specialized Methods in Social Studies Education. (2). (CIED 7172). (Offered fall semester.)

7173. Specialized Methods in Science Education. (2). (CIED 7173). (Offered fall semester.)

7174. Specialized Methods in Foreign Language. (2). (CIED 7174). (Offered fall semester.)

M791 SPECIAL EDUCATION (SPED)

6801-10. Workshop in Special Education. (1-9). For the professional in fields of special education. Intensive study of current methodologies, research, issues and trends in various areas of exceptionality and disability. See *Schedule of Classes* for topic. May be repeated when topic varies.

6900. Consultation with School/Family/Community. (3). Current professional development issues which impact on educator interaction with students, parents and other professionals including the development of communication and consultation skills.

***7000. Psycho-Educational Problems of Exceptional Children and Adults.** (3). Study of the relevant research dealing with the physical, mental, emotional, and social traits of all types of individuals who are exceptional. Consideration of major current problems and practices in the development of various programs.

*Not required if equivalent course taken at the undergraduate level. (Substitutions must be approved by adviser.)

7001-8001. Tests and Measurements for Exceptional Children and Adults. (3). Overview of psychoeducational assessment practices and issues with emphasis on educational and psychological tests used in special education; focus on informed interpretation of test data and implications for instructional practice. PREREQUISITE: SPED 7000.

7002-8002. Independent Study in Special Education. (1-6). Opportunity for self-directive, independent study in special education. PREREQUISITE: Permission of instructor.

7010-8010. Seminar in Special Education. (3). Continuing series of professional seminars designed to provide a forum for discussion of major problems, issues, trends and research concerning individuals with disabilities. May be repeated for a maximum of 6 hours credit. PREREQUISITE: Permission of instructor.

8011. Advanced Research Seminar in Special Education. (3). Research in special education and related areas leading to development of research proposal. May be repeated for maximum of 6 hours credit. PREREQUISITE: Permission of instructor.

7025. Microcomputers in Special Education. (3). Emphasis on matching software programs with the unique learning needs of students with disabilities. Adaptive interfacing techniques for students who have physical and/or sensory disabilities also addressed.

†7041-8041. Advanced Practicum in Special Education. (3-6). Supervised experience(s) with individuals with mild disabilities in cooperation with university, local, state, and/or national educational personnel. PREREQUISITE: Permission of instructor.

†7042-8042. Advanced Internship in Special Education. (3-6). Supervised experience(s) with individuals with moderate to severe disabilities in cooperation with university, local, state, and/or national education personnel. PREREQUISITE: Permission of instructor.

7050. Teaching the Exceptional Learner. (2-3). Overview of special education including characteristics and education of students with various exceptionalities. Emphasis on developing skills for effective teaching of exceptional student in regular classroom.

7060-69-8060-69. Special Topics in Special Education. (1-3). Current topics in special education. May be repeated with a change in topic. See *Schedule of Classes* for topics.

7070-79. Workshop in Special Education. (1-9). Opportunity for continuing growth to the professional in fields of special education, such as intensive study in methodologies, research, issues and trends in areas of exceptionalities and disabilities. May be repeated when topic varies. See *Schedule of Classes* for topics.

7101-8101. Psycho-Social Aspects of Pre-School Education for Children with Disabilities. (3). Research dealing with physical, mental, emotional and social traits of children with disabilities in pre-school years. PREREQUISITES: SPED 7000, 7001.

7121-8121. Educational Programming for Pre-School Children with Disabilities. (3). Methods involved in developmental assessment and educational planning for children with disabilities in pre-school years. PREREQUISITE: SPED 7101-8101.

†7141-8141. Practicum in Pre-School Education for Children with Disabilities. (3-6). Observation and supervised experience in pre-school educational settings. PREREQUISITE: SPED 7121-8121.

7201-8201. Characteristics of Individuals with Disabilities. (3). Examination of etiological, psychological, social, and physical conditions related to the educational performance of individuals with disabilities in developmental life periods. PREREQUISITE: SPED 7000 or equivalent.

7203-8203. Psycho-Social and Educational Aspects of Emotionally Disturbed. (3). Characteristics of the emotionally disturbed and behaviorally disordered. Emphasis on social, psychological, and biological theories of causality, assessment and education with a variety of emotional and/or behavioral problems.

7211-8211. Methods I: Academic Instruction in Special Education. (3). Academic methods, remediation, and educational planning for individuals with disabilities. PREREQUISITE: SPED 7000 or equivalent.

7221-8221. Methods II: Behavior Management in Special Education. (3). Methods of changing behaviors of individuals with mild to severe disabilities in various educational settings. PREREQUISITE: SPED 7000 or equivalent.

7222-8222. Methods and Techniques of Teaching Emotionally Disturbed. (3). Procedures for education individuals with emotional disturbance. Emphasis on teaching behaviors, psycho-educational management of behavior, and affective teaching techniques. PREREQUISITE: Permission of instructor.

7231-8231. Advanced Seminar in the Psycho-Social and Educational Aspects of Emotional Disturbances. (3). Theoretical and research bases for present practices in the education and treatment of emotional disturbances. PREREQUISITE: Permission of instructor.

†7241. Supervised Practicum in Special Education. (3-9). Enhanced student teaching in settings with individuals who have disabilities. PREREQUISITE: Permission of instructor.

7401-8401. Psycho-Social and Educational Aspects of Learning Disabilities. (3). Psychological, social and educational characteristics of individuals with learning disabilities. Theories and philosophies regarding the treatment, etiology and management considerations stressed.

7411-8411. Methods of Teaching Children with Learning Disabilities. (3). Remedial approaches for children with learning disabilities. Emphasis on developmental sequence and educational practices.

7431-8431. Advanced Theories in the Classroom Management of Learners with Severe Disabilities. (3). Emphasis placed on practical application of behavior change technology for learners with a variety of disabilities.

7501-8501. Psycho-Social and Educational Aspects of Mental Retardation. (3). Historical, philosophical, and societal perceptions of individuals with mental retardation. Emphasis on social, emotional, physical, and learning characteristics.

7511-8511. Clinical Problems in Teaching Mentally Retarded Children. (3). Emphasis on diagnostic and pedagogical techniques used with children who have mental retardation at the pre-academic level. PREREQUISITES: SPED 7000, 7501, or their equivalents.

7513-8513. Techniques of Teaching Students with Mental Retardation at the Secondary Level. (3). Work-study programs, functional academics, and academic remediation for adolescent and adult learners with mental retardation. PREREQUISITE: SPED 7501-8501.

7601-8601. Psycho-Social and Physical Aspects of Severe Disabilities. (3). Research related to etiological, psychological, cognitive, social, and physical characteristics of children who have moderate, severe and profound disabilities. PREREQUISITE: SPED 7000.

7611-8611. Methods of Teaching Individuals with Severe Disabilities. (3). Practical methods, curricula and materials for teaching learners who have moderate to severe disabilities.

7621-8621. Medical Aspects of Special Education. (3). An overview of medical procedures performed as related services for children with disabilities in the classroom setting; includes medication administration, seizure monitoring, CPR, first aid, suctioning, breathing assistance, external drainage procedures, positioning and handling.

†Grades of S, U, or IP will be given.

M652 ENGLISH/LANGUAGE ARTS EDUCATION (ICL)

7300-8300. Contemporary Issues in Language Arts Instruction. (3). (CIED 7300-8300). Analysis of current trends and issues in the teaching of language arts: theory and research related to teaching models

and their application in the language arts. (Offered fall, spring, and summer semesters.)

7301-8301. The Teaching of Children's Literature in the Elementary School. (3). (CIED 7301-8301). Methods of teaching children's literature in the elementary school, including story telling, dramatization, choral speech work. (Offered spring semester.)

7302-8302. Teaching Literature to Adolescents. (3). (CIED 7302-8302). Methods of teaching adolescent literature including fiction, non-fiction, drama and poetry. (Offered spring semester.)

7303-8303. English/Language Composition: Curriculum of the Secondary School. (3). (CIED 7303-8303). Emphasis on developing and implementing a sequential curriculum in secondary school language and composition. (Offered fall semester.)

7308-8308. Seminar in English/Language Arts. (3). (CIED 7308-8308). Emphasis on oral and written language models and how these models can be used in the development of a student-centered language arts curriculum. K-12. (Offered summer semester.)

M652 MATHEMATICS EDUCATION (ICL)

7500-8500. Teaching of Mathematics in the Elementary School. (3). (CIED 7500-8500). Consideration of principles and techniques of teaching mathematics in elementary schools including study and evaluation of current instructional materials. (Offered fall, spring, and summer semesters.)

7501-8501. Elementary Mathematics Education Curriculum. (3). (CIED 7501-8501). Issues and trends in elementary school mathematics curriculum. Appropriate current reports of professional groups will be considered. (Offered fall semester of odd year.)

7502-8502. Teaching Mathematics in the Secondary School. (3). (CIED 7502-8502). Consideration of principles and techniques of teaching mathematics in secondary schools including study and evaluation of materials of instruction. PREREQUISITE: Permission of instructor. (Offered spring semester.)

7503-8503. Secondary Mathematics Education Curriculum. (3). (CIED 7503-8503). Analysis of the secondary mathematics curriculum as it relates to sound educational practices.

7508-8508. Seminar in Mathematics Education. (3). (CIED 7508-8508). Study and discussion of selected mathematics education topics of concern or special interest.

M661 READING (RDNG)

7540-8540. Cognitive, Affective, and Linguistic Influences on Reading. (3). (CIED 7540-8540). Models of reading instruction, history, philosophy, and research supporting those models. (Offered fall, spring, and summer semesters.)

7541-8541. Advanced Assessment of Reading Performance. (3). (CIED 7541-8541). Principles of assessment, evaluation, and prognosis in reading; formal and informal procedures and instruments used in assessing reading and related cognitive abilities; multiple causation approach to reading difficulties. PREREQUISITES: Teaching experience and CIED 7540 or RDNG 7540 or permission of the instructor. (Offered fall semester.)

7542-8542. Alternative Procedures for the Treatment of Reading Problems. (3). (CIED 7542-8542). Application of differentiated instruction within a clinical setting to meet the needs of the disabled reader. PREREQUISITES: CIED 7540 and 7541 or RDNG 7540 and 7541 or permission of instructor. (Offered spring semester.)

7543-8543. Advanced Reading Instruction for the Special Learner. (3). (CIED 7543-8543). Etiology of reading disabilities unique to various types of handicapped children. Planning and treatment selection related to gifted and talented, learning disabled, mentally retarded, physically handicapped and other categories of special learner. (Offered spring semester of odd year.)

7544-8544. Reading and Study Skills in the Content Areas. (3). (CIED 7544-8544). Research based theories and steps necessary for academic disci-

plines; techniques for improving vocabulary, cognition, study skills, and reading rate. (Offered fall and summer semesters.)

7545. Teaching Reading In Subject Areas. (2). (CIED 7545). Methods, materials, and organizational patterns by which reading skills are developed and improved through integration with teaching strategies in subject areas. (Offered summer semester.)

7546-8546. Computer Applications in Reading Instruction. (3). (CIED 7546-8564). Incorporating computers in the reading classroom and curriculum development of educationally relevant reading programs. PREREQUISITE: CIED 7060-8060 or ICL 7060-8060 or permission of instructor. (Offered fall semester of even year.)

7547-8547. Reading Clinic. (3-6). (CIED 7547-8547). Emphasis on practical experiences of clinical diagnosis and treatment. PREREQUISITES: CIED 7540-8540 or ICL 7540-8540 or permission of instructor. (Offered summer semester of even year.)

7548-8548. Advanced Seminar in Reading Research. (3-6). (CIED 7548-8548). Survey and analysis of reading research to create background information for study of selected topics in reading; translating research into practical applications in classroom and school. PREREQUISITE: EDPB 7521. (Offered spring semester of odd year.)

7549. Foundations of Language and Reading Development. (2-3). (CIED 7549). History, theory, and research related to current trends and issues in language and reading. Restricted to students in the M.A.T. or licensure program. (Offered fall, spring, and summer semesters.)

7550. Evaluation and Remediation of Language and Reading Problems. (3). (CIED 7550). Classroom procedures for the diagnosis and correction of language and reading processes in the elementary school. Restricted to students in the M.A.T. or licensure program. PREREQUISITE: CIED 7549 or RDNG 7549. (Offered fall, spring, and summer semesters.)

M652 SCIENCE EDUCATION (ICL)

7600-8600. Teaching Science in the Elementary School. (3). (CIED 7600-8600). Current developments in elementary science education in both process and strategies of teaching science. Examination of classroom teaching practices appropriate for elementary school science instruction. (Offered fall, spring, and summer semesters.)

7601-8601. Elementary School Science Curriculum. (3). (CIED 7601-8601). Examination of science curriculum materials. Focus on procedures for evaluation of curriculum and materials and analysis of local curricula in science. Includes techniques for conducting science workshops and inservice programs. (Offered spring semester.)

7602-8602. Teaching Science in the Secondary School. (3). (CIED 7602-8602). An examination and analysis of modern science teaching strategies in the secondary school. Emphasis on information processing and classroom learning strategies. (Offered fall semester.)

7603-8603. Secondary School Science Curriculum. (3). (CIED 7603-8603). Analysis of secondary science content and materials. Emphasis on current concepts of the science curriculum and the selection of appropriate materials for teaching the various sciences. (Offered spring semester.)

7608-8608. Seminar in Science Education. (3). (CIED 7608-8608). A survey of selected problems and topics in science education. (Offered spring semester of even year.)

M652 SOCIAL STUDIES EDUCATION (ICL)

7650-8650. Teaching of Social Studies in the Elementary/Middle School. (3). (CIED 7650-8650). Consideration of principles and techniques for teaching social studies in the elementary/middle school. (Offered fall, spring, and summer semesters.)

7651-8651. Curriculum Development in Elementary/Middle School Social Studies. (3). (CIED

7651-8651). Emphasis on current curriculum developments consistent with the needs, interests, and social problems of elementary/middle school children. Includes research, new programs, and issues related to social studies curriculum.

7652-8652. Teaching of Social Studies in Middle School/Secondary School. (3). (CIED 7652-8652). Consideration of principles and techniques for teaching secondary social studies. (Offered fall and summer semesters.)

7653-8653. Middle School/Secondary Social Studies Curricula. (3). (CIED 7653-8653). Analysis of programs and curricular materials for secondary social studies education.

7658-8658. Seminar in Social Studies Education. (3). (CIED 7658-8658). A survey of current emphases in social studies education.

M652 GIFTED EDUCATION (ICL)

7801-8801. The Talented and Mentally Gifted. (3). (CIED 7801-8801). Historical and societal perceptions and definitions of the talented and mentally gifted individuals their social, emotional and learning processes. (Offered fall semester of odd year.)

7802-8802. Special Populations of the Gifted. (3) (CIED 7802-8802). Examination of the nature and needs of gifted and talented students whose performance is affected by some condition interfering with optimal growth. PREREQUISITE: SPED 7801 or ICL 7801. (Offered fall semester of even year.)

7811-8811. Methods of Teaching the Gifted and Academically Talented. (3). (CIED 7811-8811). Teaching strategies for fostering gifted behavior at preschool, elementary and secondary levels. Procedures and criteria of evaluation curriculum sequences and guides, alternative strategies for curriculum development the writing and implementing of individualized educational plans. PREREQUISITE: SPED 7801-8801 or ICL 7801-8801. (Offered spring semester of even year.)

7822-8822. Advanced Methods of Teaching Gifted and Academically Talented. (3). (CIED 7822-8822). Examination of provisions of services to gifted students in other than traditional enrichment programs. PREREQUISITES: SPED 7801, 7811 or ICL 7801, 7811. (Offered spring semester of odd year.)

M652 LIBRARY SCIENCES (ICL)

6111. Library Materials for Children. (3). (CIED 6111). Evaluation and selection of books and related library materials for leisure interests and curriculum needs of elementary school children; extensive reading, introduction to selection criteria, bibliographic aids, authors and illustrators and types of literature and information books.

6121. Library Materials for Young People and Adults. (3). (CIED 6121). Evaluation and selection of books and related library materials for leisure interests and curriculum needs of young people and adults from junior high school up; intensive reading, introduction to selection criteria, bibliographic aids, authors and illustrators and types of literature and information books.

7132. Cataloging and Classification. (3). (CIED 6502, CIED 7132). Introduction to principles and techniques of cataloging and classification of books and other library materials.

7133. School Library Administration. (3). (CIED 6503, CIED 7133). Organization and administration of elementary and secondary school libraries, including standards, evaluation, facilities, equipment, support, student assistants, and relationship to instructional and guidance programs of school.

7730. Foundations of Librarianship. (3). (CIED 6504, CIED 7730). Introduction to librarianship as a profession and library as institution in cultural and political setting; influences of social issues, societal needs, professional organizations, and federal legislation on goals, ethics, organization, programs, and problems of libraries and librarians.

7731. Introduction to Bibliography. (3). (CIED 6501, CIED 7731). Theory and purpose of bibliography as

form of access to information; emphasis on general reference sources; introduction to principles, practices and methods of reference service.

M652 GENERAL (ICL)

5555. Test Taking Skills. (3). Educational principles, strategies, and techniques designed to enhance individual test-taking skills with emphasis on preparation for the (NTE) National Teacher Examination and/or the (MAT) Miller Analogies Test. This course will not count in any degree program.

6601. Workshop in Curriculum and Instruction: Environmental Education. (3). (CIED 6601). Overview of environmental issues and problems; curriculum development, implementation, and evaluation.

6701-10. Workshop in Curriculum and Instruction. (1-9). (CIED 6701-10). Various areas of the curriculum and elements of instruction are explored. Active student participation is included. See department listing in *Schedule of Classes* for exact topics.

6950-59. Special Topics in Curriculum and Instruction. (1-3). (CIED 6950-59). Designed to allow for study of current topics in the areas of curriculum and instruction at all levels. May be repeated with a change in topic and content emphasis. See department listing in *Schedule of Classes* for exact topics.

7000. Analysis and Practice of Teaching I. (3). (CIED 7000). Analysis of research on instruction and teaching practices; implementation of research based on strategies of developing instruction, facilitating and assessing student learning. (Offered fall, spring, and summer semesters.)

7010. Analysis and Practice of Teaching II. (3). (CIED 7010). Intensive, interdisciplinary, and integrative study of models of teaching, curriculum assessment and evaluation, reading in content area, mainstreaming, multicultural concerns, and instructional technology; emphasis on theory, research, and skills through simulations and microteaching. PREREQUISITE: CIED 7000 or ICL 7000.

7020. Professional Development Seminar I. (1-3). (EDUC 7020). Interpersonal and group process skills needed for teaching.

7021. Professional Development Seminar II. (1-3). (EDUC 7021). Specialty teaching area in pedagogical skills application.

7022. Professional Development Seminar III. (1-3). (EDUC 7022). Teacher roles, professional relationships, and professional development.

7030. Assessment and Evaluation. (2). (EDUC 7030). Test construction and methods of evaluation; emphasis on teacher made tests, standardized tests, test administration, test data management, interpretation and application of test data to instructional decisions and reporting test results to students and parents.

7032. Classroom Management. (2). (EDUC 7032). Managing classroom environment; emphasis on constructive management techniques. Application of knowledge of human development and teaching and learning principles to development of classroom management systems.

7050-8050. Advanced Instructional Strategies. (3). (CIED 7050-8050). Analysis of theoretical models of instruction and related research; emphasis on application to various instructional settings. (Offered fall, spring, and summer semesters.)

7054-8054. Creativity in Teaching and Curriculum. (3). (CIED 7054-8054). Instructional strategies relevant to development of creative potential. Activities include problem-solving, metaphors, inventing, synectics, evaluation, questioning, brainstorming, creative writing and thinking, and spontaneity.

7058-8058. Values Clarification for Education. (3). (CIED 7058-8058). Values clarification strategies including those related to improving societal and social climate. Materials applicable to various subject areas. (Offered summer semester.)

7059. Models of Instruction. (3). (CIED 7059). Analysis of theoretical and research support for selected models of instruction; emphasis on teaching applications. (Offered fall, spring, and summer semesters.)

7079-8079. Implications of Research for Instruction and Curriculum. (3-12). (CIED 7079-8079). Identifies and summarizes past and current research in curriculum improvement and instruction in early childhood education, reading, language arts, mathematics, education, and science education. **PREREQUISITE:** EDRS 7521 or EDPD 7521 or permission of instructor. (Offered spring semester of odd year.)

7080. Curriculum and Instruction for the Multiethnic School. (3). Survey, analysis, and design of curriculum and instruction that considers the multiethnic nature of students in the urban school and facilitates their academic and social growth.

8081. Curriculum for Teacher Education. (3). Analysis of the structure, content, delivery and outcomes of curriculum and instruction in traditional and alternative teacher education programs.

8082. Seminar in Urban Education. (3). Analysis of contemporary issues and trends in urban education.

8083. Seminar in Rural Education. (3). Analysis of contemporary issues and trends in rural education.

7701-8701. Advanced Workshop in Instruction and Curriculum. (1-9). (CIED 7701-8701). Various areas of curriculum and elements of instruction at advanced levels. Active student participation. Topics vary. See *Schedule of Classes*.

7704-8704. Workshop: Newspaper in the Classroom. (3). (CIED 7704-8804)

7705-8705. Managing and Learning Environment. (3). (CIED 7705-8705). Teacher's role in integrated approach to managing classroom's physical and behavioral learning environments, school curriculum, and pupil development and learning. (Offered fall, spring, and summer semesters.)

7706. Family and Community Relations for Teachers. (3). (CIED 7706). Analysis of family, cultural, and community patterns in relation to the teacher's roles and responsibilities for building educational partnerships. (Offered fall, spring, and summer semesters.)

17803-8803. Internship in Kindergarten. (3-9). (CIED 7800-8800.001). Includes student teaching, supervised practicum and other similarly organized professional experiences. Designed to complement on-campus course study with actual on-site professional experience.

17804-8804. Student Teaching in Early Childhood Settings. (3-9). (CIED 7800-8800.002). Includes student teaching experiences in both PreKindergarten or Kindergarten, and Primary grades 1-3.

17805-8805. Internship in Elementary School. (3-9). (CIED 7800-8800.003). Includes student teaching, supervised practicum and other similarly organized professional experiences. Designed to complement on-campus course study with actual on-site professional experience.

17806-8806. Student Teaching in Elementary School. (3-9). (CIED 7800-8800.004). Includes student teaching, supervised practicum and other similarly organized professional experiences. Designed to complement on-campus course study with actual on-site professional experience.

17807-8807. Internship in Secondary School. (3-9). (CIED 7800-8800.005). Includes student teaching, supervised practicum and other similarly organized professional experiences. Designed to complement on-campus course study with actual on-site professional experience.

17808-8808. Student Teaching in Secondary School. (3-9). (CIED 7800-8800.006). Includes student teaching, supervised practicum and other similarly organized professional experiences. Designed to complement on-campus course study with actual on-site professional experience.

17809-8809. Reading Research Practicum. (3-9). (CIED 7800-8800.009). Participation is required in a supervised research practicum. The experience includes either a clinical or field-based component. The development of a research paper is required.

17810-8810. Practicum in Instructional Media. (3-9). (CIED 7800-8800.010). Planned supervised full-time experience in an adult training setting appropriate to the student's specialization area of instructional design and technology, providing op-

portunities to synthesize knowledge and skills, and demonstrate professional competencies in an appropriate educational/training setting.

7850-8850. Supervision of Student Teaching. (3). (CIED 7850-8850). Principles and techniques of student teaching supervision. Designed for supervising teachers, administrators, coordinators of student teaching programs, and college personnel.

7950-59-8950-59. Advanced Topics in Instruction and Curriculum. (1-3). (CIED 7950-59-8950-59). Current topics in areas of instruction and curriculum at advanced levels. May be repeated with change in topic and content emphasis. See *Schedule of Classes* for topics.

7991-8991. Independent Study in Instruction and Curriculum. (1-9). (CIED 7991-8991). Includes special problems, field studies, and other similarly organized professional experiences under the direct supervision of a faculty member within the department. Emphasis on student planning, initiating, conducting, and completing independent studies, projects, etc., designed to meet programmatic goals and individual needs.

17992. Special Project. (3). (CIED 7992). Designed as a culminating experience. Direct participation is required for the successful completion of a field-study, on-site project or other classroom based experience. (Offered fall, spring, and summer semesters.)

7993. Professional Seminar. (1). An integrative, capstone seminar for advanced post-baccalaureate teacher certification students. Students will apply reflective, analytical, and critical thinking to selected issues regarding school curriculum, teaching methods, professional ethics, legal issues, leadership and advocacy, professional relations, communication and problem solving.

17996. Thesis. (1-6). (CIED 7996). Prospectus must be approved by the faculty committee directing this research study. Application for writing thesis must be filed with the Director of Graduate Studies.

18000. Specialist Culminating Experience. (1-6). (CIED 8000). Thesis, internship, field study, or special project designed under direction of student's committee. Serves as capstone experience in Education Specialist Program.

8995. Doctoral Seminar. (3-6). (CIED 8995). Survey and analysis of research in the varied disciplines of curriculum and instruction. To be taken during the doctoral residency. May be repeated for a maximum of 6 hours of credit. (Offered fall, spring, and summer semesters.)

18996. Teaching in Instruction and Curriculum Leadership for Graduate Assistants. (1-3). Overview and practical demonstrations of the art of teaching for graduate assistants. Credit not applicable to major. May be repeated.

18997. Research Skills in Instruction and Curriculum Leadership for Graduate Assistants. (1-3). Research design, practice, and methodology in Instruction and Curriculum Leadership for graduate assistants. Credit not applicable to major. May be repeated.

19000. Doctoral Dissertation. (1-12). (CIED 9000). Credit may be earned over a period of several semesters. The dissertation may be an organized scientific contribution or a comprehensive analysis of theory and practice in a specific area.

M550 EDUCATIONAL SERVICES (EDSV)

6350. Instructional Development for Training. (3). Instructional development techniques and application in training settings, principles of curriculum development, instructional delivery, and evaluation.

6450. Media Development for Trainers. (2). Practical preparation of audiovisual materials for training applying instructional design techniques and development of media presentation skills.

6550. Organization and Management of Training Programs. (3). Development and management of instructional programs in non-school settings; focus on goals, personnel, operational and budgetary con-

siderations. **PREREQUISITE:** MGMT 3110 or permission of instructor.

†Grades of S, U, or IP will be given.

LEADERSHIP

BARBARA K. TOWNSEND, Ed.D., Chair
and Coordinator of Graduate Studies
Room 111, Patterson Hall

I. Master of Science (M.S.) Degree Program

The Department offers the Master of Science degree with a major in Leadership and Policy Studies with concentrations in (1) School Administration and Supervision or (2) Leadership.

A. Program Admission

Minimum admission requirements of the Graduate School and approval by the departmental admissions committee.

B. Program Requirements

1. A total of 36 semester hours is required of all students.

2. Nine hours of the department core consisting of the following: LEAD 7000, 7100, and 7521.

3. Concentrations:

a. *School Administration and Supervision:* A minimum of 27 hours specified by the Individual Program of Studies (IDP) developed in LDPS 7110, including LEAD 7060 and LEAD 7070.

b. *Leadership:* A minimum of 27 semester hours as specified by the student's advisory committee, including LEAD 7500.

II. Doctor of Education (Ed.D.) Degree Program

The Department offers a Doctor of Education degree with a major in Leadership and Policy Studies or Higher and Adult Education.

A. Program Admission

1. Fulfillment of university requirements for admission to the Graduate School, including an acceptable score on the Graduate Record Examination.

2. Completion of a master's degree from a regionally accredited institution.

3. A written statement of career goals.

4. Three letters of professional recommendation including one from a university faculty member and at least one from a current and immediate colleague.

B. Higher and Adult Education Major

1. A minimum of 54 semester hours beyond the master's degree including the core requirements of LEAD 8001, 8002, 8003, 8500, HIAD 8405, EDPD 8541 and 8542; 9 hours of dissertation; and 24 hours in the concentration.

2. Concentrations:

a. *Higher Education:* HIAD 8401, 8402, and 18 hours approved by the student's advisory committee.

b. *Adult Education:* HIAD 8510 and 21 hours approved by the student's advisory committee.

C. Leadership and Policy Studies Major

1. A minimum of 54 semester hours beyond the master's degree including the core requirements of LEAD 8001, 8002, 8003, EDPD 8541 and 8542; 9 hours of dissertation; and 30 hours in the concentration.

2. Concentrations:

a. *Educational Leadership:* LDPS 8121, 8132, and 8181, and 21 hours approved by the student's advisory committee.

b. *Community Education:* LEAD 8500, LDPS 8170, 8171, and 8181, and 18 hours approved by the student's advisory committee.

c. *Policy Studies:* LDPS 8305, 8310, and 8350, and 21 hours approved by the student's advisory committee.

M779 LEADERSHIP (LEAD)

6000. Foundational Studies: Education, Schooling and American Society. (3). (EDFD 7003-8003). Interdisciplinary study of educational policies and practices in American society; role and function of the

school and the teacher, analysis of major problems and issues facing contemporary public education. (Fulfills foundations requirement for graduate students seeking teacher licensure.)

6400. Leadership and Reform in American Schools. (3). Concepts of leadership in the reform context of contemporary American social and educational policy; examination of major legal, political, economic, organizational, and philosophical issues; role of the teacher-leader.

7000. Introduction to Educational Leadership. (3). (EDAS 7100). Theory and practice of educational leadership; scope, task areas, processes and procedures; organizational structure, problems and issues, and types of personnel needed in the United States.

7004. Cultural Foundations of Education for Pupil Services. (3). (EDFD 7004). Analysis of philosophical, sociocultural, and historical dimensions of educational policies and practices relating to pupil personnel services in schools; distillation of important topics in educational foundations for specialized educational employees such as school attendance officers, school counselors, school psychologists, speech-language clinicians, and school social workers.

†7005-8005. Research Skills in Leadership for Graduate Assistants. (1-3). Presentation of research methods and scholarship by faculty, students, and visiting scholars. Credit not applicable to major. Restricted to graduate assistants. May be repeated.

7050-59-8050-59. Special Topics in Leadership. (1-3). (EDAS 7712-22-8712-22). In-depth study of selected topics in educational leadership. May be repeated with change in topic.

†7060-8060. Internship. (1-6). (EDAS 7171-8171). Work experiences under supervision of practicing professional. May be repeated for maximum of 9 credits. (Prospective enrollees must secure approval from department chair 30 days prior to beginning of semester.)

†7061-8061. Practicum in Leadership. (1-3). (EDAS 7170-8170). Practical short-term work experiences in various settings appropriate to student's career needs. May be repeated for maximum of 9 credits. (Prospective enrollees must secure approval from department chair 30 days prior to beginning of semester.)

†7070-8070. Culminating Experience. (1-6). (EDAS 7996). Capstone course using a problem-based, case study approach. PREREQUISITE: Must be taken in last semester or by permission of department chair. The following courses consist of readings and reports to survey the literature on the topic. May be repeated with departmental permission.

7081-8081. Readings and Research in Higher and Adult Education. (1-3). (EDAS 7790-8790).

7082-8082. Readings and Research in Educational Leadership. (1-3). (EDAS 7710-8710).

7083-8083. Readings and Research in Educational Policy. (1-3). (EDFD 7008-8008).

7084-8084. Readings and Research in School and Community Relations. (1-3). (EDAS 7700-8700).

7085-8085. Readings and Research in Educational Supervision. (1-3). (EDAS 7750-8750).

7086-8086. Readings and Research in Educational Finance and Business Management. (1-3). (EDAS 7730-8730).

7087-8087. Readings and Research in Educational Personnel and Negotiations. (1-3). (EDAS 7760-8760).

7088-8088. Readings and Research in Educational Law. (1-3). (EDAS 7780-8780).

7089-8089. Readings and Research in Educational Plant and Transportation. (1-3). (EDAS 7740-8740).

7100. Education and Community. (3). (EDAS 7000). Educational processes and policies in formal and non-formal community settings; inter-relationships among such settings; field-based, students will assess particular educational policy and its implications within the community.

7500-8500. Adult Learning and Leadership. (3). (HIAD 7255-8255). Characteristics of adult learners; factors that affect learning, achievement, and motiva-

tion throughout the adult life-cycle; implications for educational leaders and human resource development.

8001. Educational Leadership in Organizations. (3). (EDAS 8800). Basic theories of organization and administration, historical and contemporary foundations of the field; implications of current theories and practices for organizational and human resource development.

8002. American Society and Educational Policies. (3). (EDFD 7001-8001). Historical evolution of major social issues and resulting educational policies; normative and empirical bases of educational principles and practices; sociocultural contexts of contemporary problems and issues.

8003. Policy-Oriented Research. (3). Inquiry methods appropriate to educational policy research; empirico-inductive (grounded) and constructivist inquiry strategies emphasized. PREREQUISITES: LEAD 8001 & 8002, EDRP 8541 or equivalent, or permission of the instructor.

8140. Planning of Educational Change. (3). Characteristics of change in variety of educational settings. Emphasis on planning theory, implementing and managing change processes; specific variables that impact on change efforts; analysis of planning and analysis tools; computer simulations and case.

†9000. Doctoral Dissertation. (1-9). (EDAS 9000).

M778 HIGHER AND ADULT EDUCATION (HIAD)

7403-8403. Research in Higher and Adult Education. (3). Current topics, research problems, new studies, and needed inquiries in higher and adult education. PREREQUISITE: EDRS 7541 or equivalent.

7410. Overview of Higher Education. (3). (EDAS 7190-8190). Higher education in social and historical contexts; organization and administration of colleges and universities.

7411-8411. Community Colleges. (3). (EDAS 7191-8191). History, philosophy, and changing mission of the community college; focus on administration, faculty, staff, and students; curriculum and services; funding, public relations, and the presidency.

7440-8440. Student Personnel Services in Higher Education. (3). (COUN 7613-8613). Activities, functions, relationships, and philosophy of student personnel services; historical developments and current trends in student personnel services in relation to changing concepts in higher education.

7441-8441. College Students and College Cultures. (3). (COUN 7672-8672). College student characteristics and differing life patterns in institutional perspective; variations in student and college cultures in types of institutions.

7450-8450. College and University Curriculum. (3). (HIAD 7200-8200). Structure, development, implementation, and assessment of curriculum in colleges and universities; historical and philosophical perspectives; major figures, emerging trends, and contemporary issues.

7452. Developmental Education. (3). (HIAD 7204-8204). Developmental education programs in colleges and universities. Focus on policy, administration, and instruction.

7510-8510. Overview of Adult Education. (3). (HIAD 7250). Historical development of adult education; scope of the field, including non-formal, post-secondary, education and human resource development; program planning and implementation related to adult learners.

7512-8512. Developing and Funding Leadership Programs. (3). (HIAD 7256-8256). Adult leadership programs in various organizations, agencies, and groups as primary, supplementary, or complementary function; community relations and development in funding.

7530-8530. Continuing Professional Education. (3). Background and development of continuing education for professionals, including medicine, law, social work, psychology, dentistry, and education as well as other fields; examination of impetus and providers for such programs.

7541-8451. College Teaching. (3). (HIAD 7201-8201). Issues and trends in teaching and learning in higher education; analysis of various classroom teaching approaches designed for diverse student populations in higher education.

8401. Higher Education Administration I. (3). (EDAS 7192-8192). Role, function, organization, and administration of colleges and universities; roles of presidents and other administrators; variations in academic and student life in higher education; relationships with various constituencies; problems of practice and power.

8402. Higher Education Administration II. (3). Role, function, organization, and administration of business and financial affairs; development and external affairs in colleges and universities; external roles of presidents and other administrators; acquisition and management of fiscal, property, and reputational resources across several sectors of higher education; relationships with various constituencies; problems of practice and power. PREREQUISITE: HIAD 8401 or permission of instructor.

8405. Seminar in Higher and Adult Education. (3). (HIAD 7258-8258). Culminating experience for doctoral students; examination of current issues using cross-disciplinary perspectives derived from previous coursework. Restricted to students who have completed all other courses in their program of study.

8410. Historical and Policy Perspectives in Higher Education. (3). (EDFD 7002-8002). Historical development of higher education in the United States. Current higher education policy issues in relation to their development.

8420. Higher Education Law. (3). (EDAS 8380). Legal principles and significant legal constraints relating to institutions of higher education; emphasis on application of law to organizational structure, students, personnel, programs, property, and finance; analysis of current legal issues.

8422. Higher Education Finance. (3). (EDAS 8320). Financing of institutions in higher education; sources and methods of securing funds; development of programs; procedures for budget development and analysis; other financial and economic aspects of higher education administration; analysis of current problems related to higher education finance.

8430. The Professoriate. (3). Faculties of U.S. colleges and universities, nature of their work in various types of institutions, academic reward system, and programs for continuing professional development.

M777 LEADERSHIP AND POLICY STUDIES (LDPS)

7110. Leadership Exploration Seminar. (3). (EDAS 7400). Leadership and personal prospects for a career in educational administration; development of Individual Program of Studies (IPS). PREREQUISITE: Permission of instructor.

7112-8112. Management of Educational Grants and Projects. (3). Planning and management of field-based educational projects, grants, and consulting services. Emphasis on team and group efforts; computer applications in project management. PREREQUISITE: Permission of instructor.

7120. The Supervisory Process. (1-6). (EDAS 7050). Theory and methodology of educational supervision, with emphasis on instructional leadership; differences in roles for various supervisory personnel. Project based.

7121-8121. Personnel Administration. (3). (EDAS 7160-8160). Educational personnel administration and policy including: human resource management, staffing goals, policies, recruitment, induction, roles, and professional development.

7122-8122. Collective Bargaining in Education. (1-3). (EDAS 8360). Analysis of bargaining in education, including history, issues, resource data, proposals, table tactics, contract language, impasse procedures, roles, and career opportunities in educational negotiations. PREREQUISITE: LDPS 7121 or permission of instructor.

7130. Microcomputer Applications in Educational Administration. (1-3). (EDAS 7440-8440). Role of computer and computer's role in educational admin-

istration and supervision; uses in budgeting, attendance, scheduling, student records, and inventory. PREREQUISITE: Permission of instructor.

7131. School Business Management. (1-3). (EDAS 7130-8130). Business affairs of schools in accordance with laws and policies of local, state and federal agencies; overview of legal and ethical standards; site budgeting and project management. PREREQUISITE: LDPS 7130.

7132-8132. School Finance. (3). Funding of public schools in the United States and other developed nations; analysis of various school funding models and related equity issues. PREREQUISITE: LDPS 7131 or permission of instructor.

7134-8134. Advanced Computer Applications in Educational Administration. (3). In-depth experiences with computer software specifically designed for management in education. Includes applications in areas of student and faculty record management, project management, student scheduling, transportation, food services, and facility utilization. PREREQUISITE: LDPS 7130 or permission of instructor.

7140. Participatory Governance and Change. (3). Theory, research, policy, and practice in educational restructuring and participatory governance; strategies and procedures for implementation including role clarification, participatory decision making, group problem solving, communication, team building, evaluation, development of parent-community partnerships; mission setting and ethical and moral principles of governance.

7141. The Principalship. (1-6). (EDAS 7111-8111 & 7311-8311). Role of the principal in school site leadership focusing on instructional leadership and organization and administration of the school's resources; projects for elementary, middle, junior, and secondary principals. PREREQUISITE: LDPS 7140.

7150. Educational Law. (3). (EDAS 7180-8180). Federal and State statutes and local regulations applicable to education; legal requirements and their

implications for educational operation, legal research methods and case law.

7170-8170. Community Education Administration. (3). (EDAS 7611-8611). Organizational aspects of community education programs, including administration and supervision of personnel and citizen-community participation in formulating, implementing, and evaluating community education programs.

7171-8171. Continuing and Adult Education Administration. (3). (EDAS 7612-8612). Organization and administration of adult and continuing education including: adult remedial, vocational-technical, community outreach programs; administrative methods and materials appropriate to adult habits and needs; interpreting current legislation and research relating to adult and continuing education programs; planning, implementing and evaluating strategies.

7172. Curriculum Planning in Adult Basic Education. (3). (HIAD 7252-8252). Principles of curriculum building in application to adult basic education students.

7180-8180. Politics and Power in Educational Leadership. (3). (EDAS 7810-8810). Field study of techniques and strategies for leaders in education to discover sources of community power influencing education policy; emphasis on superintendent, school board, and central office leaders.

7181-8181. Policy Implementation in Educational Administration. (3). (EDAS 7811-8811). Development and implementation of administrative policy at the local, state, and national levels in relation to forces that shape thinking of policy making bodies.

7305-8305. Issues in Educational Policy. (3). Special issues of current interest related to American educational policies and practices.

7310-8310. Philosophical Analysis and Educational Policy. (3). (EDFD 7022-8022). Exploration and use of philosophical analytical skills for assessing educational policies and practices.

7311-8311. Issues in Philosophy of Education. (3). (EDFD 7021-8021). Critical examination of is-

suess in the philosophy of education; history of issues and their effect on modern public schools.

7320-8320. Urban Education: Historical and Contemporary Perspectives. (3). Sociological and cultural dimensions of urban society and education with emphasis on contemporary issues and recent policy developments.

7330-8330. Race, Ethnicity, Gender, and American Education. (3). Historical and contemporary study of educational practices and policies related to various ethnic and racial groups, as well as women in the United States; various models of institutional and community forms of multicultural education.

7340-8340. Comparative Education. (3). Cross-cultural and cross-national study of educational policies and practices.

7350-8350. Policies and Politics of Contemporary American Education. (3). (EDFD 7033-8033). Conceptual and empirical analyses of political and social issues related to U. S. education.

8111. Educational Administration Performance Laboratory. (1-6). (EDAS 7370-8370). Laboratory experiences including gaming and simulation to illustrate complex organizations, information systems, network planning and projection systems, and leadership assessment.

8115. Educational Leadership Seminar. (3). (EDAS 7510-8510). Problems and issues derived from trends in contemporary culture that impact on educational leadership; emphasis on instructional leadership. PREREQUISITE: Permission of instructor.

8133. Economics of Education. (3). (EDAS 8220). Economic aspects of education in the United States and other developed nations. PREREQUISITE: LDPS 8132 or permission of instructor.

8155. Seminar in Education Law. (3). Analysis of current legislation and case law and its impact on education. PREREQUISITE: LDPS 7150 or permission of instructor.

†Grades of S, U, or IP will be given.

THE IMPROVEMENT OF THE UNDERSTANDING IS FOR TWO ENDS: FIRST, FOR OUR OWN INCREASE OF KNOWLEDGE; SECONDLY, TO ENABLE US TO DELIVER AND MAKE OUT THAT KNOWLEDGE TO OTHERS.

— JOHN LOCKE

THE HERFF COLLEGE OF ENGINEERING

JOHN D. RAY, Ph.D.
Dean

FRANK J. CLAYDON, Ph.D.,
Associate Dean and Director of Graduate Studies

GRADUATE ACADEMIC PROGRAMS

Department	Major	Concentration	Degree Offered
Biomedical Engineering	Biomedical Engineering		Master of Science (M.S.)
Civil Engineering	Civil Engineering	(1) Environmental Engineering (2) Foundation Engineering (3) Structural Engineering (4) Transportation Engineering (5) Water Resources Engineering	Master of Science (M.S.)
Electrical Engineering	Electrical Engineering	(1) Automatic Control Systems (2) Communications and Propagation Systems (3) Electro-Optical Systems (4) Engineering Computer Systems	Master of Science (M.S.)
Engineering Technology	Technical Education	(1) Architectural (2) Electronics (3) Manufacturing	Master of Science (M.S.)
Mechanical Engineering	Mechanical Engineering	(1) Design and Mechanical (2) Energy Systems (3) Mechanical Systems (4) Power Systems	Master of Science (M.S.)
Interdepartmental	Industrial and Systems Engineering		Master of Science (M.S.)
	Engineering	(1) Biomedical Engineering (2) Civil Engineering (3) Electrical Engineering (4) Mechanical Engineering	Doctor of Philosophy (Ph.D.)

The Herff College of Engineering offers graduate programs at the master's and doctoral levels through its departments of Biomedical, Civil, Electrical and Mechanical Engineering. In addition, a master's program in technical education is offered through the Department of Engineering Technology and an interdisciplinary master's program is offered in industrial and systems engineering. Students enrolled in the college at the master's level work toward the Master of Science (M.S.) degree. The doctoral program of the college leads to the degree of Doctor of Philosophy (Ph.D.) after successful completion of study and research in one of the following four areas: biomedical, civil, electrical, or mechanical engineering. Candidates for all degrees must follow a curriculum plan that has been approved at the departmental level and by the Director of Graduate Studies of the College.

MASTER OF SCIENCE DEGREE PROGRAMS

The purpose of the master's degree programs is to provide opportunity for advanced study in various areas of engineering of current importance. Flexibility is provided in that students have the option of a thesis or non-thesis program.

Master's Program Admission Requirements

Applicants will be considered for admission to the master's program base upon a

common set of criteria. These are the applicant's attainment of an appropriate bachelor's degree, the score earned on the Graduate Record Examination (GRE), and the undergraduate grade point average (GPA). The GPA used is either the cumulative or the last 60 semester hours of applicable courses earned toward a degree.

In addition to meeting the University minimum admission requirements, applicants must meet the following criteria established by this College.

The applicant must have:

1. appropriate bachelor's degree as determined by the admitting department.
2. an undergraduate GPA of at least 2.5.
3. a score of at least 1000 for the sum of the verbal and quantitative portions of the GRE.

An applicant who lacks an appropriate bachelor's degree may be required to complete undergraduate deficiency courses. If the number of deficiency courses is large, the applicant may be required to complete an undergraduate degree in engineering before seeking admission to the graduate program.

In addition to the above requirements, applicants whose native language is other than English must score at least 550 on the Test of English as a Foreign Language (TOEFL). Applicants are further advised that the admission requirements for the College are minimum requirements. Meeting minimum requirements does not guarantee admission into a specific Departmental Master's program.

Retention Requirements

Refer to the individual program descriptions of each department.

Graduation Requirements

Refer to the individual program descriptions of each department.

DOCTOR OF PHILOSOPHY DEGREE PROGRAM

The Herff College of Engineering offers a program leading to the degree of Doctor of Philosophy (Ph.D.) with a major in Engineering and concentrations in biomedical, civil, electrical, or mechanical engineering.

Ph.D. Admission Requirements

Applicants will be considered for admission to the doctoral's program based upon a common set of criteria. These are the applicant's educational background, Graduate Record Examination (GRE) score, grade point average (GPA), and letters of recommendation. The GPA used is either the cumulative or the last 60 semester hours of applicable courses earned toward a degree. Admission criteria also depends upon whether the applicant received a degree from an institution that is accredited at the undergraduate level by the Accrediting Board for Engineering and Technology (ABET).

In most cases, applicants will be considered for admission after completion of a master's degree. However, in certain cases, applicants will be considered for

admission to the doctoral program after the attainment of a bachelor's degree. The following criteria will be applied according to the applicant's educational background as categorized below:

A. Master's Degree

1. *Master's Degree from a School with an ABET Accredited Undergraduate Program:* An applicant who has a master's degree from an engineering program accredited at the undergraduate level by ABET will be considered for admission provided the composite score on the GRE Verbal and Quantitative sections totals at least 1000 and provided the product of the graduate GPA and the GRE score equals at least 3500, i.e., $[GPA \times GRE \geq 3500]$.

2. *Master's Degree from a School with a non-ABET Accredited Undergraduate Program or Bachelor's Degree field other than Engineering:* Applicants in this category will be considered for admission provided the composite score on the GRE Verbal and Quantitative sections totals at least 1050 and provided the product of the graduate GPA and the GRE score equals at least 3500, i.e., $[GPA \times GRE \geq 3500]$.

B. Bachelor's Degree

1. *Bachelor's Degree from an ABET Accredited Program:* An applicant who has a bachelor's degree from an engineering program accredited at the undergraduate level by ABET will be considered for admission provided the composite score on the GRE Verbal and Quantitative sections totals at least 1050 and provided the product of the undergraduate (GPA) and the (GRE) score equals at least 3600, i.e., $[GPA \times GRE \geq 3600]$.

2. *Bachelor's Degree from a non-ABET Accredited program or Master's Degree field other than Engineering:* Applicants in this category will be considered for admission provided he/she has an undergraduate GPA of at least 3.75 and a GRE score of 1150 or higher.

Grade point averages above are based on a 4.00 grading system where A = 4.00. Students presenting transcripts using a different system will be held to similar standards.

In addition to the above requirements, all applicants must submit an application for admission to The University of Memphis along with three letters of recommendation from previous instructors attesting to the applicant's academic ability and potential for success in a doctoral program. Applicants whose native language is other than English must score at least 550 on the Test of English as a Foreign Language (TOEFL).

The above represent the minimal acceptable admission requirements. Depending on the applicant's educational background, the advisory committee may require additional coursework to prepare the student for doctoral studies.

In unusual circumstances where the above admission requirements cannot be met, an applicant may seek exceptions by contacting the Director of Graduate Studies for the college.

Applicants are further advised that the College reserves the right to deny some applications for admissions because of limited faculty availability and physical facilities to accommodate student research interests.

Retention Requirements

A student will be retained continuously in the program until completion of the degree providing the following conditions are met:

All students will be required to maintain a grade point average (GPA) of at least 3.00. Should the student's GPA fall below that mark, a period of one semester or one full summer term will be allowed to correct

the deficiency. Failure to regain the minimum 3.00 is considered sufficient reason for being dropped from the program. This period may, at the discretion of the student's advisory committee, be extended one additional semester or full summer term. If the GPA at the end of this extension is still below 3.00, the student will be dismissed from the program.

Accumulation of more than 7 semester hours of cumulative graduate coursework with a grade of C or lower will result in dismissal from the program, i.e., a student who accumulates 6 hours of graduate coursework with a grade of C or lower in a master's program is permitted only one additional hour with a grade of C or lower.

All students are required to complete a comprehensive examination with at least a minimum passing score on the written portion and a satisfactory performance on the oral portion of the exam. A second and final attempt to pass this examination may be granted by the student's advisory committee; failure will result in mandatory dismissal from the program.

Graduation Requirements

General Requirements: Each student must earn at least 90 semester hours beyond the bachelor's degree or 57 beyond the master's degree. Credit for the dissertation will range from 18 to 30 semester hours with the decision concerning the credit allowance being made by the student's advisory committee. Early in each student's program of study, a committee composed of graduate faculty in the college will be appointed by the Director of Graduate Studies upon recommendation of the departmental chair.

At least 66 of the 90 semester hours required, including dissertation and research credit, must be in engineering and at least 57 in Biomedical, Civil, Electrical or Mechanical Engineering. No more than 15 semester hours credit of 6000 level courses will count toward the 90-hour Ph.D. degree.

Residency Requirements: A minimum of 24 semester hours must be earned while the student is in continuous residence. This may be done in two regular consecutive semesters. If the student is retained as a graduate assistant, the residency requirement may be met over a single continuous twelve-month period provided the student completes eighteen semester hours in two successive regular semesters. A student is not eligible to complete the residency requirement until a minimum of thirty semester hours of graduate study have been successfully completed.

Language Requirements: Students will be required to demonstrate foreign language skills sufficient to understand the major body of pertinent literature in the chosen field of study and to conduct the research necessary for completion of the dissertation or other research as may be required by the advisory committee.

Mathematics Requirements: Based on the qualifying examination required of all The University of Memphis doctoral students, the advisory committee may stipulate that appropriate mathematics courses be made a part of the student's program.

Examination Requirements: All students must take a qualifying examination in accordance with the University policy outlined under Minimum Requirements for Doctoral Degrees in this catalog. This examination, which is intended to determine the student's mastery of broad fundamental concepts, will be given only after the student has completed at least thirty semester hours of graduate study. Hence, for students entering the program with a master's degree, the exam will occur shortly after the beginning of the program. The results will be used to prescribe the remainder of the student's academic program, and successful completion of the qualifying exam is required for admission to candidacy as a doctoral student.

The examination will generally be given in written form. However, the student's committee may require an oral session before making a final decision on the student's qualification to continue their studies.

After the final semester of coursework, the student will be required to successfully complete written and oral comprehensive examinations that will ascertain the student's mastery of the theoretical material that will underlie the dissertation topic.

At the completion of the dissertation, the student must defend the work, before the advisory committee and other interested members of the university faculty who may care to question the results of the research.

Course Requirements: Nine semester hours of major core courses are required of all doctoral students that integrates their doctoral experience. This core is developed by the student's graduate advisory committee. Each concentration requires a minimum of 57 semester hours of coursework and research including the dissertation in the chosen field of study. Each student's program of study will be developed with the advisory committee.

BIOMEDICAL ENGINEERING

VINCENT TURITTO, Sc.D., *Chair*
Room 330, Engineering Technology

MICHAEL R.T. YEN, Ph.D.,
Coordinator of Graduate Studies
Room 330, Engineering Technology

I. The Biomedical Engineering Department offers graduate programs leading to a Master's of Science degree with a major in Biomedical Engineering and a Doctor of Philosophy degree in the College of Engineering with a concentration in Biomedical Engineering. Students may take courses in the following areas: biomechanics, microcirculation, cardiovascular dynamics, pulmonary and respiratory mechanics, and transport phenomenon.

II. M.S. Degree Program**Retention Policy**

Students that have been admitted to the program on a conditional basis must satisfy all requirements of their conditional admission at the end of each semester of enrollment. Failure to satisfy this criterion will result in dismissal from the program.

Students will be permitted two (2) grades of C in courses taken at The University of Memphis. Students will be evaluated by their committee at the end of the semester in which a third grade of C or lower is earned for possible dismissal from the program.

Graduation Requirements

Students graduating with a Master's of Science Degree with a Major in Biomedical Engineering must complete 30 hours of course work, 21 hours must be 7000 level courses, which includes 6 hours of thesis credit.

Students may petition to their graduate committee to elect a non-thesis option. Students graduating under this option will be required to complete 33 hours of course work, 24 hours must be 7000 level courses, which include 6 hours of individual research project courses culminating in oral and written reports.

III. Ph.D. Degree Program

See the beginning of the College section for admission, retention, and graduation requirements.

Q795 BIOMEDICAL ENGINEERING (BIOM)

7302-8302. Theory of Continuous Media. (3). (Same as MECH 7302). Analysis of stress and deformation at a point; derivation of the fundamental equations in Cartesian tensor notation by application of the basic laws of conservation of mass, energy and momentum in mechanics and thermodynamics.

7352-8352. Fluid Mechanics for Biomedical Engineers. (3). Elements of hydrodynamics; cardiovascular system, flow of blood in tubes with elastic walls, pulsatile blood flow, flow through arterial walls, models of the circulation and pulse waves system.

7354-8354. Fluid Dynamics and Mass Transport for Biomedical Engineers. (3). Basic principles of fluid dynamics and mass transport applied to biological systems with particular reference to blood viscosity and thrombosis.

7501-8501. Orthopedics I. (3). Analysis of forces, stresses and strains transmitted through musculoskeletal system, orthopedic implants, and load assist devices; gait analysis, body lubrication and related topics.

7504-8504. Biomedical Measurements. (3). Measurement techniques applicable in biomedical engineering; data acquisition system, mechanical instrumentation, interface systems, signal analyses; biocompatibility requirements.

7505-8505. Computer Techniques in Biomedical Engineering. (3). Computer technology with medical applications; basic physiology and biomedical instruments devices and system; diagnostic support systems.

7508-8508. Biochemical Engineering. (3). Application of engineering principles to effect biochemical transformation through use of living cells, subcellular organelles or enzymes; overview of biotechnology, bioreactor design; cell energetics, enzyme kinetics, Michalis-Menton calculations, immobilized cells; biosensors and process control.

7509-8509. Circulatory Flow Dynamics. (3). Mechanics of blood circulation, fluid mechanics of the heart, blood flow in arteries, unsteady flow in veins, current concepts in circulatory assist devices and other selected topics.

7510-8510. Biomechanics I. (3). Introduction to physiological systems with emphasis on structure and function of tissue and organs; application of continuum mechanics to understanding of tissue and organ behavior at microscopic and gross levels; design analyses of surgical procedures and prosthetic devices.

7511-8511. Biomechanics II. (3). Viscoelastic and solid biomaterials; non-Newtonian behavior of blood synovial fluid, mucus and protoplasm; basic mechanical properties of collagen, elastin, bone,

cartilage, muscle, blood vessel, and other living tissue; application of continuum mechanics to biomechanics.

7512-8512. Biomedical Engineering Laboratory. (3). Demonstrations and experiments on basic concepts of biomedical engineering designs through surgical procedures involving experimental models.

7513-8513. Advanced Biomechanics. (3). Modern development of biomechanics at advanced mathematical level; dynamics of the lung, blood flow, microcirculation, and muscle mechanics.

†7514-8514. Biomedical Engineering Seminar. (1). Seminars by faculty, visiting lecturers, research fellows, graduate students, and others on related topics in biomedical engineering.

7515-8515. Biomedical Engineering Design. (3). Engineering design principles pertaining to biomedical engineering; wave propagation in tissue, flow in cardiovascular systems; electrocardiographs, heart valves, mechanical circulation devices, high frequency ventilation, etc.

7517-8517. Cardiopulmonary Physiology for Biomedical Engineers. (3). Introduction to mechanical behavior of cardiovascular and pulmonary systems based on engineering principles; physiology of cardiovascular system followed by engineering applications to obtain quantitative descriptions.

7518-8518. Research Techniques. (3, 6). Presentation of research techniques through organized lectures, special assignments, and selected research topics.

7519-8519. Human Anatomy for Biomedical Engineers. (3). Musculoskeletal system of human body with heavy emphasis on engineering functions; lecturers, model studies, and cadaver observations.

7520-8520. Physiology for Biomedical Engineers. (3). Introduction of physiology of the human body with emphasis on engineering functions; physiology of cells, membrane, respiration, cardiovascular, kidney, gastrointestinal, neurophysiology, etc.

7521-8521. Research Internship for Biomedical Engineers. (3). Independent study for biomedical engineering students in the masters program; investigation in at least one area selected from a master list and approved by the student's advisor.

7522-8522. Advanced Research Internship. (6). Independent research problems for biomedical engineering students; investigations in three different research areas selected from a master list and approved by the student's graduate committee.

7523-8523. Biorheology for Biomedical Engineers. (3). Application of biotechnology in biomedical engineering and medicine; deformation and flow of biological materials, tube flow and viscous shear in blood, blood elements and plasma, viscoelastic properties of lung, muscle and other tissues.

7525-8525. Artificial Organs. (3). Basic concepts of blood contacting devices used as replacement for natural organs; Artificial kidney, lung, heart-lung bypass, total hearts, pancreas.

7530-8530. Biomaterials. (3). Introduction to materials used in biomedical engineering; biocompatibility and uses of implantable materials such as ceramics, polyethylene, metals, composites and other materials.

7532-8532. Advanced Biomaterials. (3). Materials used in biomedical applications in relationship to corrosion, crack propagation, creep, and related topic; tissue ingrowth into materials.

7900-7910 - 8900-8910. Special Topics in Biomedical Engineering. (1-3). Topics are varied and announced in *Schedule of Classes*.

7991-8991. Project I. (1-3). Independent study in Biomedical Engineering on topic selected in conjunction with instructor. Oral and written reports required.

7992-8992. Project II. (1-3). Independent investigation of problem selected in consultation with instructor. Oral and written reports required.

†7996. Master's Thesis. (1-6).

†9000. Doctorate Dissertation. (1-12).

† Grades of S, U, or IP will be given.

CIVIL ENGINEERING

MARTIN E. LIPINSKI, Ph.D., Chair
Room 104A, Engineering Building

LARRY W. MOORE, Ph.D.,
Coordinator of Graduate Studies

I. The department of Civil Engineering offers a graduate program leading to a Master of Science degree with a major in Civil Engineering (concentrations in Environmental Engineering, Foundation Engineering, Structural Engineering, Transportation Engineering, and Water Resources Engineering) and a Ph.D. degree with a major in Engineering (concentration in Civil Engineering).

II. M.S. Degree Program**A. Program Admission**

The Herff College of Engineering has established uniform admission criteria for all graduate programs. Exceptions to these requirements may be addressed by the Graduate Admissions and Retention Committee of the department and must be approved by the Dean.

B. Program Prerequisites

Bachelor of Science Degree

C. Program Requirements

1. Non-thesis option: 33 credit hours as required below
2. Thesis option: 30 credit hours as required below
3. 24 hours of Civil Engineering course work at the 7000 level. This total includes thesis if that option is selected.

4. Students electing the thesis option will be required to complete an independent research project culminating in a master's thesis. Upon completion of the thesis, the student must successfully pass an oral examination to assess mastery of the thesis topic and to evaluate the student's knowledge in Civil Engineering.

5. Students electing the non-thesis option must take CIVL 7001, 7012, and 7993. In addition, non-thesis students must pass a Civil Engineering Master of Science Examination. This examination will be offered in November and April of each year. This exam will be taken in the student's final semester.

6. Concentrations:

Concentration may be made by selection of courses from the following five areas: (No special concentration is required.)

- Environmental Engineering
6143, 6144, 7141, 7142, 7143, 7144, 7145, 7146, 7185, 7195, 7196, 7991, 7996.
- Foundation Engineering
6136, 7132, 7133, 7134, 7182, 7991, 7996, 7130.
- Structural Engineering
6131, 6136, 7001, 7111, 7115, 7116, 7117, 7118, 7119, 7112, 7113, 7991, 7996.
- Transportation Engineering
6162, 6163, 6164, 7001, 7662, 7163, 7164, 7165, 7166, 7168, 7169, 7991, 7996.
- Water Resources Engineering
7133, 7663, 7181, 7182, 7191, 7192, 7194, 7195, 7196, 7991, 7996.

D. Retention Policy

All students enrolled in the Department of Civil Engineering are expected to attain high academic achievement in all courses taken. The criteria listed below will be used to determine retention status of students enrolled in the program leading to a Master of Science degree in Civil Engineering.

1. Students having been unconditionally admitted to the graduate program in Civil Engineering who maintain a cumulative grade point average of 3.00 or higher will be considered to be in good standing.

2. Students must maintain a cumulative grade point average of 3.00 in all course work at The University of Memphis, in all Civil Engineering course work at The University of Memphis, and for all 7000 level course work at The University of Memphis at the end of each semester of enrollment. Any student not meeting these conditions will be placed on probation.

3. Students admitted on probation must maintain a 3.00 average at the end of each semester until 9 hours of graduate credit are earned. A student having a cumulative grade point average less than 3.00 at the end of the period described will be dismissed. A student having a cumulative grade point average of 3.00 or above will then be subject to the retention criteria listed in 2 above.

4. A student will be permitted two (2) grades of C or lower in graduate courses taken at The University of Memphis. A student will be dismissed from the program at the end of the semester in which a third grade of C or lower is earned.

5. A student who has been dropped from the graduate program in the Department of Civil Engineering will be denied permission to enroll in Civil Engineering courses in semesters subsequent to dismissal from the department.

III. Ph.D. Degree Program

See the beginning of the College section for admission, retention, and graduation requirements.

0800 CIVIL ENGINEERING (CIVL)

6112. Deterministic Systems Engineering. (3). Employment of optimization techniques to well-defined civil engineering problems; emphasis on development and application of mathematical models. Topics include transportation and resource allocation problems. PREREQUISITE: CIVL 3101.

6113. Stochastic Systems Engineering. (3). Development and use of probabilistic techniques in civil engineering; emphasis on applications. Topics include simulation, decision making under uncertainty, and queueing problems. PREREQUISITE: MATH 2322.

6131. Intermediate Steel Design. (3). Design of plate girders and composite beams; moment connections; building design. PREREQUISITE: CIVL 3131.

6136. Intermediate Reinforced Concrete Design. (3). Design of two-way slab systems; column design including length effects; integrated building design using current code provisions. PREREQUISITES: CIVL 4122, 4135.

6143. Environmental Engineering I. (3). Basic physical chemical treatment concepts for water and wastewater will be presented with laboratory demonstration of unit operations and processes as well as derivation of design data through laboratory studies. *Two lecture, three laboratory hours per week.* COREQUISITE: CIVL 4141.

6144. Environmental Engineering II. (3). Basic biological treatment concepts for wastewater with laboratory demonstration of unit operations as well as derivation of design data through laboratory studies. *Two lecture, three laboratory hours per week.* PREREQUISITE: CIVL 4141.

6162. Traffic Engineering. (4). Traits and behavior patterns of road users and their vehicles. Includes traffic signs and signals, pavement markings, hazard delineation, capacity, accidents and parking analysis. *Three lecture, three laboratory hours per week.* PREREQUISITE: CIVL 3161.

6163. Airport Planning and Design. (3). Aeronautical demand and air traffic control; airport and runway configuration; capacity and delay analysis; geometric design of runways and taxiways; airport access and parking; ground movements and baggage movements. PREREQUISITE: CIVL 3161.

6164. Route Location and Design. (3). Elements of route location and design—emphasis on horizontal and vertical alignment, curvature, gradient and sight distance. *Two lecture, three laboratory hours per week.* PREREQUISITES: CIVL 1101, 3161.

6180. Intermediate Hydrology. (3). Current methods and techniques used in hydrologic analysis and design of water resources projects, streamflow hydrograph analysis, groundwater hydrology, design flood determination and project feasibility. *Three lecture hours per week.* PREREQUISITE: CIVL 3181 or permission of instructor.

6190. Water Resources Planning and Design. (3). Application of engineering principles to planning and design of multipurpose water resources projects, various physical components and appearances of water resources projects and economic, financial, and social feasibility of various purposes. *Three lecture hours per week.* PREREQUISITE: CIVL 3181, 4111 or permission of instructor.

7001-8001. Engineering Analysis. (3). Numerical integration of linear and non-linear differential equations; finite difference methods; systems of linear algebraic equations; applications to engineering problems. PREREQUISITE: Permission of instructor.

7012-8012. Probabilistic Methods in Engineering. (3). Concepts and methods of probability and statistics that are essential for modeling engineering problems under conditions of uncertainty. Application to practical problems. PREREQUISITE: Permission of instructor.

7111-8111. Computational Mechanics. (3). Advanced mathematical modeling techniques using finite difference, finite element, and boundary element formulations to solve civil engineering problems. PREREQUISITE: Permission of instructor.

7112-8112. Plastic Design of Steel Structures. (3). (7122). Plastic analysis and design of steel structures; application to multi-story buildings. PREREQUISITE: Permission of instructor.

7113-8113. Prestressed Concrete Design. (3). (7121). Theory of prestressing. Design of prestressed concrete beams, slabs and box girders. Statically determinate and indeterminate structures. PREREQUISITE: Permission of instructor.

7114-8114. Elastic Stability. (3). Classical theory of buckling of rods, plates, and shells. PREREQUISITE: Permission of instructor.

7115-8115. Plate and Shell Structures. (3). (Same as MECH 7115) Analysis of rectangular and circular flat plates; large deflections of plates; variational methods; analysis of shells as surfaces of revolution under symmetric and asymmetric loading. PREREQUISITE: Permission of instructor.

7116-8116. Structural Dynamics. (3). Dynamic analysis of single-degree-of-freedom structures; response to general dynamic loading; modal analysis of multistory shear buildings; introduction to nonlinear and random vibration. PREREQUISITE: Permission of instructor.

7117-8117. Finite Element Methods in Structural Mechanics. (3). Structural idealization, stiffness properties of elements, structural analysis of element assemblage. Plane stress and strain problems. Applications to problems of plates and shells. Computer solution of large systems. PREREQUISITE: Permission of instructor.

7118-8118. Design of Structural Systems. (3). Integrated design of buildings or bridges; application of current codes and specifications. PREREQUISITE: Permission of instructor.

7119-8119. Earthquake Resistant Design. (3). Earthquake strong motion; response spectrum analysis; seismic design of buildings. PREREQUISITE: Permission of instructor.

7121-8121. Computational Structural Dynamics. (3). Advanced applications of numerical methods and finite element analyses to structural dynamics problems; use of commercially available FEA codes to solve practical problems. PREREQUISITES: CIVL 7116-8116, 7117-8117.

7123-8123. Seismic Risk Assessment of Structures. (3). Evaluation of seismic hazard and site-specific ground motion for critical facilities; analysis of structural reliability and seismic risk. PREREQUISITE: Permission of instructor.

7130-8130. Foundation Analysis. (3). Analysis of footing, raft, pile and pier foundations; analysis of earth pressures on retaining walls, rigid bulkheads, flexible bulkheads and braced excavations.

7132-8132. Advanced Soil Mechanics. (3). Stresses in soil masses; porewater stresses; consolidation and settlement; shear strength; applications to problem solution.

7133-8133. Earth Structures. (3). Analysis, design and construction of earth dams, levees, embankments and slopes; soil stabilization; seepage, drainage and flow nets. PREREQUISITE: CIVL 7132-8132.

7134-8134. Foundation Engineering. (3). Critical study of foundation design of completed projects using case records; emphasis on failures and performance records. PREREQUISITE: CIVL 7130-8130, 7132-8132.

7135-8135. Soil Dynamics. (3). Theory and measurements of dynamic properties of soils and their applications in seismic hazards assessments, earth-

quake engineering design, and geophysics studies. PREREQUISITE: Permission of instructor.

7141-8141. Environment Engineering Design I. (3). Design of a water treatment plant; application of fundamental water treatment theory; evaluation of alternatives; selection and design of optimum alternative. PREREQUISITE: CIVL 6143 or permission of instructor.

7142-8142. Environment Engineering Design II. (3). Design of a wastewater treatment plant; application of fundamental wastewater treatment theory; evaluation of alternative; selection and design of optimum alternative. PREREQUISITE: CIVL 6144 or permission of instructor.

7143-8143. Solid Waste Management I. (3). Systems approach to solid waste generation, characterization, collection, transportation, disposal emphasizing both domestic and industrial wastes. PREREQUISITE: Permission of instructor.

7144-8144. Solid Waste Management II. (3). Systems approach to unique solid wastes (inflammable industrial, sewage sludge, etc.), as well as resource recovery and energy conversion as disposal practices. PREREQUISITE: Permission of instructor.

7145-8145. Advanced Biological Treatment. (3). In-depth study of biokinetics applicable to waste management; model evaluations; hazardous and non-hazardous wastes. PREREQUISITE: CIVL 6144.

7146-8146. Advanced Physical/Chemical Treatment. (3). An in-depth analysis of theory and practice of advanced water and wastewater treatment processes; emphasis on adsorption processes, ion exchange, membrane processes, chemical oxidation, land treatment, nutrient removal, and sludge treatment and disposal. PREREQUISITE: CIVL 6143 or permission of instructor.

7147-8147. Environment Engineering Design III. (3). Design of solid waste and hazardous waste management systems; application of current design theories; review of regulatory requirements. PREREQUISITE: Permission of instructor.

7153-8153. Water Quality Modeling of Streams. (3). Water quality model conceptualization; emphasis on geometric representation, temporal variation, hydrodynamic considerations, and solution techniques. Water quality models incorporating physical, biological, and chemical processes; verification of water quality models; case histories. PREREQUISITE: Permission of instructor.

7154-8154. Industrial Wastewater Treatment. (3). In-plant control measures and end-of-pipe treatment technologies for reducing conventional and toxic industrial pollutant discharges; emphasis on water conservation, wastewater recycle/reuse, and optimum treatment strategies for waste streams from major industries. PREREQUISITE: Permission of instructor.

7162-8162. Transportation Systems Evaluation. (3). Transportation problems, goals, and objectives; evaluation and decision-making techniques; measurement of variables and intangibles in transportation decisions, cost allocation and benefit transfer, risk and uncertainty; financing and implementation; differential impacts of transportation improvements. PREREQUISITE: Permission of instructor.

7163-8163. Transportation on Inland Waterways. (3). Inland waterways (IWW) freight characteristics and floating equipment; extent and nature of IWW in U.S.; terminal sites and harbors, intermodal and ocean freight interrelationships; materials handling at terminals; terminal types and geometrics; problems and solutions. PREREQUISITE: Permission of instructor.

7164-8164. Urban Transportation Engineering. (3). A review of the transportation problem as it relates to the development patterns in American cities. The theory and application to engineering and socio-economic factors directed toward the formulation of models for conducting transportation studies. PREREQUISITE: Permission of instructor.

7165-8165. Geometric Design of Transportation Systems. (3). Design of streets and highways with emphasis on the factors and features controlling safe and efficient vehicle operation. Applications of de-

sign concepts to urban and rural systems, intersections, interchanges, safety appearances, and parking facilities. PREREQUISITE: CIVL 6164 or permission of instructor.

7166-8166. Design of Highway and Airport Pavements. (3). Design practices, materials and testing of flexible and rigid pavements. PREREQUISITE: Permission of instructor.

7168-8168. Traffic Engineering Operations. (3). Theory of traffic control: traffic laws and ordinances; application of traffic control devices; analysis and design of traffic signal systems, parking control and design pedestrian control; one-way and unbalanced lane operation, roadway illumination; selected operational problems. PREREQUISITES: CIVL 6162 or permission of instructor.

7169-8169. Mass Transit Systems. (3). Operational analysis of equipment and facility design and service characteristics of urban mass transit systems; analysis of capacity, speed, accessibility, terminal operations; study of financing, decision-making, administration and marketing policies and practices, trends in future transit technology. PREREQUISITE: Permission of instructor.

7181-8181. Statistical Hydrologic Modeling. (3). Current statistical techniques used in stochastic, deterministic, and parametric hydrologic models; emphasis on probability and frequency analysis; optimization methods; time series analysis and synthesis; sensitivity analysis; computer applications. PREREQUISITE: Permission of instructor.

7182-8182. Engineering Aspects of Sedimentation and Erosion. (3). Soil erosion and sedimentation process within a watershed; emphasis on means of controlling erosion and sediment from land-disturbing activities. PREREQUISITE: Permission of instructor.

7185-8185. Hydraulics of Open Channels. (3). (7148). Phenomena accompanying flow of water in open channels, uniform and varied flow, critical conditions, backwater curves or water surface profiles, hydraulic jumps, hydraulic drops and various design application. PREREQUISITE: Permission of instructor.

7191-8191. Computer Application in Water Resources. (3). Application of current computer programs used in hydrology, hydraulics, sediment transport, groundwater flow, water quality, and water resources engineering and planning. Permission of instructor.

7192-8192. River Engineering. (3). River mechanics and principles governing river regulation and improvement, with emphasis on navigation and flood control structures. PREREQUISITE: CIVL 7185-8185 or permission of instructor.

7193-8193. Hydraulics of Sediment Transport in Rivers and Lakes. (3). River mechanics and stream morphology governing hydraulics of bed loads and sediment transport in alluvial river system; current methods for conducting sediment investigation; engineering analysis procedures for design of stable channel system. PREREQUISITE: Permission of instructor.

7194-8194. Computation River Hydraulics. (3). (7149). Advanced studies in computational open channel hydraulics; major emphasis on unsteady flow simulation in natural rivers, dynamic flood routing, sediment transport and transport of pollutants. PREREQUISITES: CIVL 7001-8001 and CIVL 7185-8185, or permission of instructor.

7195-8195. Groundwater Hydraulics. (3). Theory of ground water flow; computer simulation models; well hydraulics; design and construction of pump selection; computer methods in well testing and design. Ground water contribution to water demand and conjunctive use.

7196-8196. Urban Drainage. (3). Flooding and pollution problems associated with urban areas; application of planning, analysis and hydraulic design techniques for storm water and erosion control measures. PREREQUISITE: CIVL 7185-8185 or permission of instructor.

7197-8197. Ground Water Quality Control. (3). Analysis of ground water quality and pollution problems; techniques for computer modeling, monitoring, and site remediation of ground water problems. PRE-

REQUISITE: Permission of instructor. CIVL 6180 recommended.

7900-10-8900-10. Special Topics in Civil Engineering. (1-3). Topics are varied and announced in the *Schedule of Classes*.

7991-8991. Projects. (3). Independent investigation of problem selected in consultation with instructor; report required. *Nine laboratory hours per week.*

7993-8993. Project and Report. (3). Independent study for students in non-thesis option program. Students demonstrate ability to pursue, complete, and report on project related to Civil Engineering practice. Written and oral report prepared for acceptance by faculty committee. *Nine laboratory hours per week.*

†7996. Thesis. (1, 3, or 6).

†9000. Dissertation. (1-12).

† Grades of S, U, or IP will be given.

ELECTRICAL ENGINEERING

CARL E. HALFORD, Ph.D., *Chair
Room 206, Engineering Building*

STEVEN T. GRIFFIN, Ph.D.,
*Coordinator of Graduate Studies
Room 205, Engineering Building*

I. The Department of Electrical Engineering offers graduate programs leading to the Master of Science degree with a major in Electrical Engineering (concentrations in Automatic Control Systems, Communications and Propagation Systems, Electrophysical Systems, and Engineering Computer Systems) and a Ph.D. degree with a major in Engineering (concentration in Electrical Engineering).

II. M.S. Degree Program

A. Program Requirements

1. Thesis option. 30 semester hours, including a thesis (6 semester hours). An average grade of "B" must be maintained in ALL Electrical Engineering graduate coursework.

a. No more than 9 semester hours may be taken outside the department. Adviser's approval is required.

b. At least 21 hours at the 7000 level are required, of which at least 18 hours must be in Electrical Engineering.

2. Non-thesis option. 33 semester hours. An average grade of "B" must be maintained in ALL Electrical Engineering graduate coursework.

a. No more than 9 semester hours may be taken outside the department. Adviser's approval is required.

b. Each student will be required to complete ELEC 7991 or ELEC 7992 for a total of at least 3 hours.

c. At least 23 semester hours at the 7000 level required, of which at least 18 hours must be in Electrical Engineering.

3. All students are required to pass a comprehensive exam during the last semester.

4. Students may elect to pursue graduate work in one of the following areas of concentration by completing 21 semester hours of coursework. At least 12 of the 21 semester hours must be taken at the 7000 level.

a. Electro-physical Systems: ELEC 6240, 6241, 6242, 6243, 7211, 7214, 7241, 7243, 7244, 7245, 7247.

b. Automatic Control Systems: ELEC 6251, 6252, 6253, 6261, 7100, 7240, 7251, 7252, 7521, 7522, 7523, 7524.

c. Engineering Computer Systems: ELEC 6222, 6230, 6232, 6270, 6274, 6271, 6272, 7214, 7215, 7240, 7261, 7262, 7263, 7264, 7266, 7267, 7272, 7273.

d. Communications and Propagation Systems, ELEC 6212, 6230, 6232, 6236, 7211, 7231, 7232, 7233, 7244, 7261, 7262, 7263.

Note: Projects I or II (ELEC 7991 or 7992) or Thesis (ELEC 7996) may be taken for credit in any of the areas of concentration.

B. Retention Requirements

All students enrolled in the Department of Electrical Engineering are expected to attain high academic achievement in all courses taken. The criteria listed below will be used to determine retention status of students enrolled in the program leading to a Master of Science degree in Electrical Engineering.

1. Students having been unconditionally admitted to the graduate program in Electrical Engineering who maintain a cumulative grade point average of 3.00 or higher

will be considered to be in good standing if no more than two (2) grades of C or lower have been earned. (See item 3 below).

2. Students must maintain a cumulative grade point average of 3.00 at the end of each semester of enrollment in all course work at The University of Memphis, including all Electrical Engineering course work and all 7000 level course work. Any student not meeting these conditions will be placed on probation by the department.

3. A student will be permitted two (2) grades of C or lower in graduate courses taken at The University of Memphis. A student will be dismissed at the end of the semester in which a third grade of C or lower is earned.

4. A student who has been dropped from the graduate program in the Department of Electrical Engineering will be denied permission to enroll in Electrical Engineering courses in semesters subsequent to dismissal from the department.

5. Courses applied to the M.S. degree program requirements must have the adviser's approval.

III. Ph.D. Degree Program

See the beginning of the College section for admission, retention, and graduation requirements.

Q820 ELECTRICAL ENGINEERING (ELEC)

6202. Electrical Power Systems. (3). Investigation of problems associated with the transmission of electrical energy. Load-flow studies, and fault analysis by use of symmetrical components.

6204. Power Distribution Systems. (3). Distribution of power from transmission systems to users; primary and secondary feeders; voltage regulation; underground, overhead and network design; lightning and protective device coordination.

6212. Electromagnetic Field Theory II. (4). Plane waves, steady state and transient solutions of transmission line equations. Steady state solutions of waveguide equations.

6221. Electronics III. (4). Applications of analog and digital electronic circuits; special purpose circuits and devices. *Three lecture, three laboratory hours per week.*

6222. Digital Logic and Computer Design. (3). Applications of digital system design using MSI, LSI, and VLSI circuits; design of arithmetic logic units, multiple input controllers, and practical interfacing techniques.

6223. Electrical Engineering Instrumentation. (4). Transducers for physical systems; mechanical, temperature, acoustic and biomedical transducers; methods of processing and analyzing data. *Three lecture, three laboratory hours per week.*

6230. Data Communications Systems. (3). Data communications in information and computing systems. Analog and digital means of transmitting and controlling information. Organization and requirements of data communication systems including modulation and demodulation, multiplexing, switching, error detection and correction.

6231. Communication Theory. (3). Frequency and time domain; modulation, random signal theory; autocorrelation; noise, communication systems.

6232. Discrete Signal Processing. (3). An introduction to deterministic and random discrete-time signal time averaging, digital filtering, spectral analysis, and detection and estimation of signals. Applications to computer processing of biomedical, seismic, and radar signals.

6236. Advanced Studies in Communications Systems. (3). Review of signal/system theory, probability and random processes; noise in modulation systems, M-ary data, spread-spectrum modulation, and satellite communications systems, optimum receiver and signal-space concepts, estimation theory and its applications to communications.

6240. Lasers. (3). Laser theory, analysis, and design; quantum description of light generation, ray optics, cavity design, Gaussian beams, and optical resonators; laser survey.

6241. Solid State Physical Electronics. (3). Quantum concepts; statistics; crystal structure; conduction processes in solids; p-n junctions and devices; field effect devices; charge transfer devices.

6242. Electro-Optics. (3). Classical optics including Gaussian optics, Newtonian optics, and vergence theory; optical design with aberration concepts, F-numbers, pupils and stops; radiometry with respect to flux transfer calculations; light sources and detectors.

6243. Linear Optical Systems. (3). Review of Fourier techniques for analysis and design of linear systems, extension to 2-d methods; 2-d transforms applied to linear optical systems and data processing.

6251. Control System Engineering. (3). General equations of physical linear systems and their transfer functions. Transient analysis and stability of control systems. Bode plots, Nichols plot, Routh-Hurwitz criterion, root locus method, introduction to compensation techniques and systems in state space.

6252. Digital Control Systems. (3). Problems involved with and analysis techniques applicable to digital control systems. Requires a *priori* knowledge of Laplace transforms. Basic knowledge of feedback control theory desirable.

6253. Control Systems Laboratory. (1). Investigation of fundamental properties associated with analysis of control systems, compensating networks, analog and digital computer simulations. COREQUISITE: ELEC 6251 or 6252.

6261. Introduction to Network Synthesis. (3). Design, simulation, and realization of active filter networks with emphasis on sensitivities, tolerances, and implementation.

6270. Introduction to Microprocessors. (4). LSI circuitry, microprocessor architecture, hardware and software, applications and system design. Three lecture, three laboratory hours per week.

6271. Computer Interfacing. (3). Hardware and software aspects of connecting computers to peripherals, including tradeoffs between hardware and software; connecting CPUs to ROM, RAM, parallel ports and serial ports; applications of serial and parallel ports, including IEEE-488, Centronics, RS-422, RS-499, and RS-485 interfaces; backplane buses, displays, keyboards, A/D and D/A converters, linking interface routines to application software and operating systems.

6272. Engineering Software. (3). Introduction to hierarchical operating systems. Use of the C programming language.

6274. Software Design with ADA. (3). Introduction to ADA; detailed software design methodology using structured and object oriented techniques for large systems; reusable components, ADA programming support environment. PREREQUISITE: Knowledge of a structured high order language.

6900-09. Special Topics In Electrical Engineering. (1-3). Topics are varied and announced in *Schedule of Classes*.

7100-8100. Linear Systems Analysis. (3). Systems concepts and mathematical tools including Z-transforms; analysis of systems, both continuous and discrete, in the time domain and frequency domain.

7204-8204. Computer Aided VLSI Design. (3). Design techniques for VLSI circuits, bipolar and MOS technologies; design rules; CAD tools, timing, testability and VLSI architectures.

7211-8211. Advanced Electromagnetic Field Theory. (3). Advanced studies in electromagnetic fields, radiation and propagation of energy. PREREQUISITE: ELEC 6212 or permission.

7214-8214. Image Processing. (3). Theory and applications of digital image processing, sampling, quantization, enhancement and restoration of images; use of segmentation, descriptors, and pattern recognition; architectures for image processing.

7215-8215. Digital Signal Processing. (3). Application of discrete transform theory to spectral analysis, digital filters, random signal analysis. PREREQUISITE: Permission of instructor.

7230-8230. Solid State Devices. (3). Internal function, limitations, and applications of unique components found in modern telecommunication designs. Electro-optic devices, detectors, resonators, antenna and negative resistance components. PREREQUISITE: ELEC 7231.

7231-8231. Communication Electronics. (3). Analysis and design of small and large signal amplifiers.

Multistage amplifiers. Analysis and design of oscillators. Feedback and stability in amplifier design.

7232-8232. Analog Communication Circuit Design. (3). Design and applications of analog communication systems. Transmitter and receiver technologies. PREREQUISITE: ELEC 7231 or permission.

7233-8233. Power Electronics. (3). Power semiconductor switches, rectifiers, phase-controlled rectifiers, and other power control devices; power control applications.

7240-8240. Neural Network Methods. (3). Theories, concepts and domain of application of neural networks; network paradigms of Hopfield, Grossberg, Kohonen and others; architecture and capabilities of neural networks; design and implementation of neural networks for practical applications.

7241-8241. Nonlinear Optics. (3). Multiphoton effects in materials, electro-optic retardation, and other advanced optical effects of interest in engineering of optical systems.

7243-8243. Fourier Optics. (3). Analysis of two-dimensional linear systems, scalar diffraction theory, Fresnel and Fraunhofer diffraction. Fourier transforming properties of lenses, spatial frequency analysis of optical systems, optical information processing and holography.

7244-8244. Fiber Optics Communications. (3). Application and design of fiber optical cables, transmitters and receivers. Technical tradeoffs related to cables, sources and detectors. PREREQUISITE: ELEC 6240 or equivalent.

7245-8245. Statistical Optics. (3). Techniques for describing random processes applied to generation, propagation, imaging and detection of light; statistical properties of light, coherence, imaging with inhomogeneous media, statistics of photoelectric detection of light.

7247-8247. Integrated Optics. (3). Review of current literature pertaining to integrated optics, innovative solid state optical structures, and optoelectronic devices.

7251-8251. Random Signals and Noise. (3). Statistical methods for describing and analyzing random signals and noise. Autocorrelation, crosscorrelation, and spectral density functions. Optimal linear filter theory.

7252-8252. Information Theory. (3). Introduction to entropy and channel capacity, group codes, block codes, cyclic codes. Application of coding techniques to improve system reliability. Error correcting codes. PREREQUISITE: ELEC 7251 or permission of instructor.

7253-8253. Adaptive Filtering. (3). Introduction to adaptive filters and adaptive processing; optimum estimation techniques; adaptive algorithms for finite and infinite impulse response filters; recursive and total least squares estimation lattice filters; frequency domain adaptive filtering analog and digital adaptive filter realizations; applications to computer communication networks, speech processing, adaptive array processing, and system modeling.

7261-8261. Architecture and Design of Digital Computers. (3). Advanced logical design of hardware and organization structure of digital computers; architectural properties and control strategies; processor and memory organizations, addressing and interrupt structures, and I/O controllers; hardware and software trade-offs, and speed considerations.

7262-8262. Fundamentals of Artificial Intelligence. (3). Matching and goal reduction, symbolic and numeric constraints, vision and rule-based systems, logic and deduction, knowledge representation, language understanding, perception, and learning.

7263-8263. Architecture, Design of Multiprocessing Computers. (3). Design philosophies for high speed multiprocessing systems; addressing schemes, memory allocation and protection, processor and memory allocation; stack, parallel, pipeline, and data flow computers; multiprocessing systems and applications. PREREQUISITE: Permission of instructor.

7264-8264. Fault-Tolerant Multiprocessing Systems. (3). Models and methods for analysis and design of fault-tolerant hardware systems, software systems and multiprocessing computing systems; TMR and NMR Systems; fault diagnosis, coding,

techniques, reconfiguration, design verification and testing; analysis and architecture of fault-tolerant multiprocessing systems, current fault-tolerant multiprocessing systems and applications.

7266-8266. PROLOG Processing for AI Applications. (3). Introduction to logic, logic programming, PROLOG syntax, trees and lists, backtracking and cut, input and output, built-in predicates, example programs, memory hierarchies, garbage collection techniques, architecture of PROLOG machines and expert systems. All applications.

7267-8267. LISP Processing for AI Applications. (3). Fundamentals of LISP programming, symbolic processing, searching, goal reduction, matching, problems and problem spaces, problem solving methods, and AI applications.

7272-8272. Microprogramming. (3). Principles and practices of microprogramming in modern computer systems.

7273-8273. Modern Microprocessors. (3). Introduction to capabilities of state-of-the-art microprocessors and their supporting components.

7521-8521. Advanced Control System Engineering. (3). Cascade and feedback compensation. Analysis and control of nonlinear systems. Introduction to optimal techniques. PREREQUISITE: ELEC 6251 or permission.

7522-8522. Stochastic and Adaptive Controls Theory. (3). Principles and applications of deterministic and statistical design, random processes in automatic control.

7523-8523. Theory of Optimal Control Systems. (3). State variable description of systems, maximum principle of Pontryagin, optimization of linear systems with quadratic performance measures, time and field optimal systems.

7524-8524. Parameter Estimation and Controls. (3). Principles of parameter estimation and application to systems engineering.

7601-8601. Bioelectric Phenomena. (3). Principles of electromagnetic field theory and electrical circuits applied to bioelectric phenomena; bioelectric signal evocation, recording, analysis and simulation; cell membrane biophysics and heart electrophysiology.

7602-8602. Biophysical Electrocardiography. (3). Principles of Electromagnetic Field Theory, Mathematics, and Electrical Circuits applied to problems that explore biophysical basis of electrocardiography as well as methodologies for analysis.

7900-10-8900-10. Special Topics In Electrical Engineering. (1-3). Topics are varied and announced in *Schedule of Classes*.

7991-8991. Projects I. (1-3). Independent investigation of a problem selected in consultation with instructor; report required. Repeatable by permission.

7992-8992. Projects II. (1-3). Independent investigation of a problem selected in consultation with instructor; report required. Repeatable by permission.

†7996. Thesis. (1-12). Master's thesis. Only six hours are applicable to the degree.

†9000. Dissertation. (1-12).

† Grades of S, U, or IP will be given.

ENGINEERING TECHNOLOGY

WESTON T. BROOKS, D.Ed., Chair
Room 203 Technology Building
KENNETH D. CREMER, Ed.D.
Coordinator of Graduate Studies Room
234 Technology Building

I. The Department of Engineering Technology offers a graduate program leading to the Master of Science degree with a major in Technical Education. Concentrations are available in Architecture, Electronics, and Manufacturing.

II. M.S. Degree Program**A. Program Admissions**

1. Admission requirements of the College.
2. Personal interview with Coordinator of Graduate Studies.

B. Program Prerequisites

Applicant must have completed a minimum of 18 semester hours of upper division credit in an appropriate area of Technology or related area.

C. Program Requirements

1. A total of 33 semester hours - non-thesis option. Students selecting the non-thesis option must complete TECH 7991, Projects I.
2. A total of 30 semester hours for candidates selecting the thesis option.
3. 7015 Applied Statistical Methods of Industry must be completed by each candidate.
4. A minimum of 12 semester hours must be taken in one concentration area.
5. Candidates for the degree must average a B in all Technology courses.
6. Candidates for the degree must pass a comprehensive written examination conducted by three faculty members designated by students and their advisers.
 - a. Comprehensive examinations may be taken by students in good standing during the last term of course work.
 - b. The comprehensive written examination will be administered the first Monday of April, July and November of each year. If the university is not in session on these dates the following Monday will be designated.
7. A follow-up oral examination is optional with the examining committee.
8. Concentrations may be made by selection of courses from the following four areas:
 - a. Architecture: 6472, 7103, 7105, 7106, 7801, 7992.
 - b. Electronics: 6261, 7223, 7263, 7273, 7283, 7801, 7811, 7821, 7822, 7831.
 - c. Manufacturing: 6472, 6474, 6476, 6950, 7401, 7402, 7404, 7406, 7408, 7414.

0890 TECHNOLOGY (TECH)

6261. **C++ Programming.** (4). Applications of the C++ programming language to problems from selected areas of engineering technology; data collecting, modeling techniques, constraints, program development and validation, and interfacing with peripherals and machine language. *Three lecture, three laboratory hours per week.* PREREQUISITE: TECH 2261. COREQUISITE: TECH 3251.
6472. **Computer Aided Drafting and Design.** (3). Overview of CADD Technology, hardware and software options (two and three dimensional principles) and applications to produce computer generated designing and working drawings. *Two lecture, three laboratory hours per week.* PREREQUISITE: TECH 1521 or equivalent.
6474. **Automation and Robotics.** (3). (6476). Capabilities and applications of programmable logic controllers, computers and robots in automated systems. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
6476. **Computer Aided Manufacturing.** (3). Computer numerical control programming by manual data input and distributed numerical control by computer assistance. System assessment of CNC machines and components for the integrated manufacturing environment. *Two lecture, three laboratory hours per week.* PREREQUISITE: TECH 3281 or 4472.
6950. **Product Safety Management.** (3). Modern concepts of accident prevention by means of safety analysis. Analyses of responsibilities and requirements of management in producing safe consumer products. Emphasis on electrical and mechanical hazards.
7015. **Applied Statistical Methods of Industry.** (3). Application of statistical concepts to production processes and data gathering in industry including frequency, distribution, location and dispersion, probability dispersions, confidence limits, significance tests and industrial sampling.
7105. **Project Planning and Scheduling.** (3). Contemporary methods used in project planning and scheduling; emphasis on critical path method (CPM)

with computer application; solution of actual problems stressed.

7106. **Project and Equipment Cost Analysis.** (3). Different elements of project and equipment costs; annual cost, depreciation, replacement cost, and retirement of equipment; benefit-cost ratio analysis of multiple alternatives; income tax influence on buying new equipment; computer application in project cost analysis.
7223. **Computer Techniques in Laboratory Environment.** (3). Laboratory applications of microcomputer and minicomputer to process control, digital/data communications, simulation, and signal conditioning. *One lecture, five laboratory hours per week.* PREREQUISITE: Permission of instructor.
7263. **Advanced Digital Circuits and Applications.** (3). Pragmatic treatment of analysis, synthesis, and applications of digital integrated circuits and systems. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7273. **Advanced Microprocessor Architecture.** (3). Structure of the microprocessor, Bit-slice and monolithic systems; ALU design, data transfer and storage registers and control unit logic; microprogramming techniques. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7283. **Advanced Data Acquisition.** (3). Use of digital and analog circuits to accomplish the computer analysis of empirical data; transducers, digital and analog conversions, linear and operational amplifiers, interfacing techniques; data scaling and manipulation. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7401. **Advanced Work Design and Measurement.** (3). Philosophy and practice of waste reduction in process or service system; review of work measurement techniques; advanced study of performance rating, standard data, basic motion time system, learning curves, time formula construction and work sampling. PREREQUISITE: Tech 4460 or permission of instructor.
7402. **Advanced Statistical Quality Control.** (3). Taguchi methods for improved process and product design; loss function, ANOVA, orthogonal arrays and linear graphs, multiple level experimental design, parameter and tolerance design. PREREQUISITE: Tech 4462 or permission of instructor.
7404. **World-Class Manufacturing.** (3). World-class manufacturing concepts and companies that have successfully implemented Just-In-Time, total quality control, and continuous improvement techniques. PREREQUISITE: Tech 4464 or permission of instructor.
7406. **Materials Handling Systems.** (3). Analysis, design and evaluation of traditional and contemporary approaches to materials handling- analytical and computer procedures for designing handling systems. PREREQUISITE: Permission of instructor.
7408. **Production Processes.** (3). A coordinated study of manufacturing processes and equipment, operation sequence planning, economic aspects of equipment selection, tooling and processing a product from product design to final assembly for quantity production.
7414. **Group Technology and CIM.** (3). Applications of Group Technology (GT) and Computer-Integrated Manufacturing (CIM); integrating materials management and shop-floor-data acquisition and control. PREREQUISITE: TECH 6474 or permission of instructor.
7601. **Architectural Graphics.** (3). Techniques of contemporary presentation applicable to architectural design with emphasis on advanced perspective and delineation. Computer applications and calibration table will be utilized for the theoretical procedures. Practical problems utilized to develop the creative capabilities of mature students.
7801. **Precision Measurements.** (3). Review of linear and electronics fundamentals; analysis, synthesis, specifications, and applications of electronic test equipment and systems. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7811. **Technology of Electronic Communication Systems.** (3). Engineering and economic aspects in

the design and operation of publicly and privately owned communication systems. PREREQUISITE: Permission of instructor.

7821. **Advanced Microwave Technology.** (3). Microwave theory and equipment applications, including techniques for measuring power, frequency, frequency spectrums, impedance, VSWR, reflection coefficient, circuit Q, noise, and antenna gain. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7822. **Industrial Process Control Systems.** (3). Simulation and pragmatic analysis of closed loop industrial control systems using programmable logic controllers; practical considerations of control loop quality and stability; applications of digital computer for direct and supervisory control and on-line analysis. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7831. **Advanced Integrated Circuits Technology.** (3). Theory and applications of integrated circuits and systems; emphasis on linear integrated circuits. Characteristics, power requirements, and applications to amplifiers, oscillators, demodulators, waveshaping circuits, active filters, converters, and troubleshooting techniques. *Two lecture, three laboratory hours per week.* PREREQUISITE: Permission of instructor.
7841. **Fiber Optics in Communication and Other Applications.** (3). Practical approach and theoretical analysis of fiber optics; emphasis on fiber optics transmission and system performance, practical aspects of fibers connection and loss encountered; fiber optics components such as couplers and switches. PREREQUISITE: TECH 3811 or permission of instructor.
7991. **Projects I.** (3). Independent investigation of a problem selected in consultation with instructor; report required.
7992. **Projects II.** (3). Independent investigation of a problem selected in consultation with instructor; report required.
17996. **Thesis** (1-6). Writing of the thesis with emphasis on adequate setup of the problem, collection of data, their use, and conclusions. Students must present in writing a proposal acceptable to the graduate committee under whose direction the thesis is to be written.

† Grades of S, U, or IP will be given.

INDUSTRIAL AND SYSTEMS ENGINEERING

MARTIN E. LIPINSKI, Ph.D.,
Coordinator of Graduate Studies
Room 104 Engineering Building

I. The Industrial and Systems Engineering program is designed to provide an interdisciplinary area of study emphasizing model building and optimization techniques. This program offers a Master of Science degree with emphasis areas individually designed.

II. M.S. Degree Program**A. Program Admission**

The Herff College of Engineering has established uniform admissions criteria for all graduate programs. Exceptions to these requirements may be addressed by the Graduate Admissions and Retention Committee of the department and must be approved by the Dean.

B. Program Prerequisites

1. a. A bachelor's degree from an ABET accredited four-year program or
 - b. A bachelor's degree from a non-ABET accredited four-year program plus 18 hours of upper division mathematics and science courses.
 2. Three semesters of calculus, one semester of upper division statistics, and one semester of engineering economics or equivalent.
- C. Program Requirements**
1. Non-thesis option: 33 semester hours with a minimum of 21 hours in the Engineering College and a maximum of 9 hours in a collateral area as defined by the chairman.
 2. Thesis option: 30 semester hours with a minimum of 18 hours in the Engineering College and a maximum of

6 hours in a collateral area as defined by the chairman, and 6 hours of thesis credit.

3. INSE 7601, 7602, 7608, 7610, and 7641 required for both options.

4. A faculty advisory committee will be appointed for each student entering the program. Students will meet with their committee within the first two weeks of their first semester. The advisory committee will define the students program including any necessary language or computer communication courses.

D. Retention Policy

All students enrolled in the Industrial and Systems Engineering Program are expected to attain high academic achievement in all courses taken. The criteria listed below will be used to determine retention status.

1. Students having been unconditionally admitted to the graduate program who maintain a cumulative grade point average of 3.00 or higher will be considered to be in good standing.

2. Students must maintain a cumulative grade point average of 3.00 in all course work at The University of Memphis, in all INSE courses work at The University of Memphis, and for all 7000 level course work at The University of Memphis at the end of each semester of enrollment. Any student not meeting these conditions will be placed on probation.

3. Students admitted with conditions must maintain a 3.00 average at the end of each semester until 9 hours of graduate credit are earned. A student having a cumulative grade point average less than 3.00 at the end of the period described will be dismissed. A student having a cumulative grade point average of 3.00 or above will then be subject to the retention criteria listed in 2 above.

4. Students admitted with program deficiencies must satisfy these deficiencies with a grade of B or better within their first semester of grade work or the student will be placed on probation.

5. A student will be permitted two (2) grades of C in graduate courses taken at The University of Memphis with no more than one grade of C in INSE courses. A student will be dismissed from the program at the end of the semester in which a third grade of C is earned or the second grade of C is earned in INSE courses.

6. A student who has been dropped from the program will be denied permission to enroll in INSE courses in semesters subsequent to dismissal from the department.

Q831 INDUSTRIAL AND SYSTEMS ENGINEERING (INSE)

7601. Experimental Analysis. (3). Order statistics, moment-generating-function techniques, point estimation, maximum likelihood estimators, and sampling theory. PREREQUISITE: Permission of instructor. Offered fall semester.

7602. Engineering Experimental Design I. (3). Hypothesis test, analysis of variance, simple and multiple linear regression; introduction to ANOVA and statistical packages. PREREQUISITE: INSE 7601. Offered spring semester.

7604. Engineering Experimental Design II. (3). Applications of statistical methods in noise reducing designs, factorial designs, and fractional factorial designs. BMDP and SPSS emphasized. PREREQUISITE: INSE 7602. Offered fall semester.

7605. Experimental Analysis II. (3). Applied design and analysis of engineering experiments. ANOVA, regression, and nonparametric statistics with emphasis placed on the use and interpretation of statistical packages. Projects required. PREREQUISITE: INSE 7604. Offered spring semester.

7608. Modeling. (3). Principles of problem formulation, verification, and validation; emphasis on recognizing and exploiting applicability of previous course work as it relates to real-world situations. PREREQUISITES: 12 hours in INSE courses. Offered fall semester.

7610. Operations Research I. Deterministic models in Operations Research. Linear, programming; duality, sensitivity analysis, transportation and network models. Offered fall semester.

7616. Operations Research III. (3). Modeling and optimization of non-linear integer, and dynamic programming problems; applications in production, scheduling, and routing. PREREQUISITE: INSE 7610. Offered spring semester.

7620. Network Algorithms. (3). Network and graph algorithms with applications in transportation and communication design; transportation problem, minimum cost flow problem, and tree algorithms. PREREQUISITE: Equivalent of INSE 7610 or permission of instructor. Offered spring semester.

7641. Operations Research II. (3). Stochastic models in Operations Research; Markov chains, queuing theory, inventory systems, and discrete simulation. PREREQUISITE: INSE 7601. Offered spring semester.

7644. Advanced Engineering Economics and Decision Theory. (3). Advanced engineering economy and decision making concepts and techniques in analysis of engineering alternatives emphasizing decision making under risk and uncertainty. PREREQUISITES: INSE 7610 or permission of instructor. Offered spring semester.

7645. Forecasting Techniques. (3). Use of forecasting techniques such as moving averages, exponential smoothing, ARIMA, and Box Jenkins models in engineering analysis of alternatives and decision making. Design project and report required. COREQUISITES: INSE 7601. Offered fall semester.

7647. Quality Assurance and Reliability. (3). Theory of reliability and quality control. The use of probability models, Data display and reduction, sampling statistics and their distributions. Implementation of quality assurance in industrial production. PREREQUISITE: Permission of instructor. Offered fall semester.

7660. Systems Simulation. (3). Principles of stochastic simulation methods for input-output analysis of complex systems; use of SIMSCRIPT simulation languages. PREREQUISITES: INSE 7601, 7602, and permission of instructor. Offered spring semester.

7685. Seminar. (1). Presentations by faculty, members of industry, and students; material presented is representative of state-of-the-art work in field; reports may be either based on own work, or readings of appropriate journal articles. Offered spring and fall semesters.

7900-10. Special Topics In Industrial and Systems Engineering. (1-3). Topics are varied and announced in *Schedule of Classes*. Offered spring and fall semesters.

7991. Research In Industrial Systems. (3). Independent investigation of a problem selected in consultation with instructor, report required. PREREQUISITE: Permission of instructor. Offered spring and fall semesters.

7992. Research In Industrial Systems II. (3). Independent investigation of problem selected with instructor; report required. PREREQUISITE: Permission of instructor. Offered spring and fall semesters.

†7996. Thesis. (3-6).

† Grades of S, U, or IP will be given.

MECHANICAL ENGINEERING

EDWARD H. PERRY, Ph.D., P.E., Chair
Room 312, Engineering Building

TEONG E. TAN, Ph.D.
Coordinator of Graduate Studies
Room 312, Engineering Building

I. The department of Mechanical Engineering offers a graduate program leading to the Master of Science degree with a major in Mechanical Engineering. Concentrations are available in design and manufacturing, energy systems, mechanical systems, and power systems.

II. M.S. Degree Program

A. Program Requirements

A more detailed description of the information listed below will be given by the Coordinator of Graduate Studies to students admitted into the Mechanical Engineering M.S. program.

1. Thesis Option: A minimum of 30 semester hours total with a minimum of 18 hours in 7000 level MECH courses consisting of 6 hours in MECH 7341 and 7342 as required core courses, and 6 hours in MECH 7996 for a thesis. A maximum of 9 hours in 6000 level MECH or collateral courses and a maximum of 3 hours in a 7000

level collateral course. Collateral courses must be in mathematics or physical science, or another engineering area, or a combination.

2. Non-Thesis Option: A minimum of 33 semester hours total with a minimum of 21 hours in 7000 level MECH courses, consisting of 6 hours in MECH 7341 and 7342 as required core courses, and 6 hours in MECH 7992 for an independent research project. A maximum of 9 hours in 6000 level MECH or collateral courses and a maximum of 3 hours in a 7000 level collateral course. Collateral courses must be in mathematics or physical science, or another engineering area, or a combination.

3. Transfer credit is limited to 6 credit hours.

4. Course Load Maximums:

15 credit hours per semester for full-time student
9 credit hours per semester for full-time conditional student

12 credit hours per semester for graduate assistants. There are a limited number of graduate assistantships available; contact the chair of Mechanical Engineering for applications.

5. Students selecting the thesis option will be required to complete an independent research project culminating in a masters thesis. Upon completion of the thesis, the student must successfully pass an oral examination to assess mastery of the thesis topic and to evaluate the students knowledge in mechanical engineering.

6. Students selecting the non-thesis option will be required to pass both written and oral comprehensive examinations during the final semester of study. In addition, the student is required to complete a 6-hour independent research project (MECH 7992) culminating in both written and oral reports.

7. Students who wish to take mechanical engineering courses must have prior consultation and approval by the Coordinator of Graduate Studies or by an advisory committee in the Department of Mechanical Engineering.

B. Retention Policy

1. Students who have been admitted to the program on a conditional basis must satisfy all requirements of their admission by the end of the first semester of enrollment.

2. A student must maintain a GPA of 3.00 or higher throughout the program. A student will be permitted two grades of C or lower in courses approved for the degree. A student will be dismissed at the end of the semester in which a third grade of C or lower is earned.

III. Ph.D. Degree Program

See the beginning of this College section for admission, retention, and graduation requirements. A more detailed description of the information listed below will be given by the Coordinator of Graduate Studies to students admitted into the Mechanical Engineering concentration.

Q870 MECHANICAL ENGINEERING (MECH)

6309. Gas Dynamics. (3). Concepts in compressible flow, emphasis on real and ideal gas dynamic effects and non-equilibrium flow; application of numerical methods. PREREQUISITES: MECH 3312, 3331.

6313. Heat Transfer II. (3). Principles of boiling, condensing, and radiation heat transfer. Fundamentals of heat exchanger design. PREREQUISITE: MECH 4311.

6315. Heating, Ventilation and Air Conditioning. (3). Psychrometric analyses, heating and cooling loads of buildings, and analyses of air conditioning systems. PREREQUISITE: MECH 4311.

6324. Computer Methods in Design. (3). Application of computer-aided drafting packages to the design of mechanical components and systems; introduction to fundamental concepts and principles of finite element methods and design optimization; design project assignments using computer-aided engineering software for analysis and design solution. PREREQUISITES: MECH 3323, 3341.

6325. Advanced Mechanics of Materials. (3). Biaxial stresses, torsion, unsymmetrical bending of beams, shear centers, contact stresses, failure theory, and other selected topics. PREREQUISITE: MECH 3322.

6326. Biomedical Systems Analysis-Mechanical. (3). Introduction to concepts used in analyzing living systems. Simulation of body functions with mechanical and computer models. Familiarization with the design of mechanical bioengineering devices such as heart valves, heart-lung machines, renal analysis machines. PREREQUISITES: MECH 2332, 3322.

6330. Introduction to Composite Materials. (3). Introduction to fiber reinforced composite materials; mechanical behavior, strength, design methodology, and implementation of computer aided design. PREREQUISITES: MECH 3320, 3322.

6333. Aerospace Propulsion Systems. (3). Fundamentals of airbreathing and rocket propulsion devices. Principles of combustion thermodynamics, gas turbine operation, solid and liquid propellants, performance evaluation, and atmospheric and space mission propulsion requirements. PREREQUISITE: MECH 4331.

6337. Internal Combustion Engines. (3). Principles of Otto, Diesel and Brayton cycle engines. Effects of various fuels and fuel delivery systems, air induction systems, ignition systems, and pollution control techniques on engine performance. PREREQUISITES: MECH 3312, 3331.

6340. Manufacturing Processes. (3). Fundamentals of mechanical behavior of materials, manufacturing properties of materials; casting, bulk deformation, sheetmetal forming; material removal processes; processing of polymers, ceramics and glasses composite materials; powder metallurgy; fastening and joining processes; nontraditional manufacturing processes; economics of integrated design and manufacturing processes; economics of integrated design and manufacturing. PREREQUISITES: MECH 3320, 3322.

6345. Design of Mechanisms. (3). Graphical and analytical mechanism synthesis techniques for path generation, function generation, rigid body guidance and optimization of force transmission characteristics. PREREQUISITES: MECH 3321, 4322.

6346. Advanced Mechanical Controls. (3). Advanced modeling of mechanical control systems; review of digital and optimal control systems and simulation of control systems. PREREQUISITE: MECH 4344.

6350. Mechanics for Biomedical Engineers. (4). (7308). Analyses of bone and joint structure of the body related to basic mechanical equations and properties. Mathematical modeling of bone structure, mechanical properties, static loading, dynamic loading, fatigue, wear, corrosion. PREREQUISITES: MECH 3320, 3322.

6371. Mechanical Vibrations. (3). Kinematics of harmonic and non-harmonic vibrations; systems of one and several degrees of freedom, free and forced vibrations; self-excited vibration. PREREQUISITES: MECH 3321, 3341.

7115-8115. Plate and Shell Structures. (3). (Same as CIVL 7115). Analysis of rectangular and circular flat plates; large deflections of plates; variational methods; analysis of shells as surfaces of revolution under symmetric and axisymmetric loading.

7302-8302. Theory of Continuous Media. (3). (Same as BIOM 7302). Analysis of stress and deformation at a point; derivation of the fundamental equations in Cartesian tensor notation by application of the basic laws of conservation of mass, energy, and momentum in mechanics and thermodynamics. PREREQUISITES: MECH 3322, 7341-8341.

7303-8303. Advanced Dynamics. (3). Formulation of three dimensional nonlinear dynamical equations of motion for particles and rigid bodies; modeling of dynamic systems; numerical integration. PREREQUISITES: MECH 3321, 7341-8341.

7304-8304. Nonlinear Dynamics and Chaos. (3). Dynamics of differential equations; geometric concepts in Hamiltonian dynamics; classical perturbation theory; chaos in Hamiltonian systems and area-preserving mappings.

7305-8305. Inviscid Flow Theory. (3). General equations of fluid mechanics; equations of two-dimensional inviscid flow; stream function and velocity potential definitions; irrotational flow; Laplace's equation in various flow fields and geometries; combined flows and superposition. PREREQUISITES: MECH 3312, 3331, 7341-8341.

7306-8306. Viscous Flow. (3). Advanced introduction to physical principles governing viscous fluid flow; fundamental equations developed from first principles and topic include: flow kinematics, derivation of Navier-Stokes equations, exact solutions of N-S equations for internal and external flows, dimensional analysis, creeping flows, Vorticity dynamics, flow control.

7307-8307. Advanced Viscous Flow. (3). Advanced topics in viscous flow including incompressible and compressible boundary layer theory, free shear flows, stability analysis, turbulent flow modeling, approximate N-S solutions, non-Newtonian flows.

7323-8323. Conduction Heat Transfer. (3). Fundamentals of steady-state and transient heat conduction; applications of Fourier series, Laplace transforms, finite differences and finite elements to conduction problems. PREREQUISITES: MECH 4311, 7341-8341.

7324-8324. Radiation Heat Transfer. (3). Fundamentals of radiation properties of surfaces and radiation exchange between surfaces; black, gray, and non-gray surfaces; integral and numerical techniques employed in radiation problems. PREREQUISITES: MECH 4311, 7341-8341.

7325-8325. Convection Heat Transfer. (3). Fundamentals of free and forced convection heat transfer using differential and integral formulation of laminar and turbulent boundary layers for flow over internal and external surfaces; influence of temperature-dependent properties; convective heat transfer at high velocities. PREREQUISITES: MECH 4311, 7341-8341.

7331-8331. Advanced Thermodynamics. (3). Areas of study include equations of state, aircraft and missile propulsion, refrigeration and heat pump cycles, cryogenics, criteria for thermodynamic equilibrium, binary mixtures, and chemical reactions. PREREQUISITES: MECH 4311, 7341-8341.

7335-8335. Statistical Thermodynamics. (3). Development of fundamental principles of statistical mechanics, quantum mechanics, and kinetic theory. Irreversible phenomena as they relate to thermodynamic processes and systems; conclusions of classic thermodynamics established from microscopic viewpoint. PREREQUISITES: MECH 4311, 7341-8341.

7341-8341. Engineering Analysis I. (3). Analysis of engineering systems using closed form solutions; application of Fourier series and transforms, Laplace transforms, power series methods, vector calculus, ordinary and partial differential equations. PREREQUISITE: MATH 3391.

7342-8342. Engineering Analysis II. (3). Continuation of MECH 7341. Matrices and determinants, complex analysis, conformal mapping techniques, applications to thermal/fluid and applied mechanics

problems, engineering applications of probability and statistics.

7355-8355. Engineering Optimization. (3). Practical aspects of optimization methodology with emphasis on techniques and procedures relevant to engineering applications in design, operations and analysis; engineering case studies. PREREQUISITES: MECH 4322, 7342-8342.

7361-8361. Mechanical Behavior of Materials. (3). Performance of materials at elevated temperatures; statistical aspect of brittle fracture; advanced treatment of fatigue failure; linear elastic fracture mechanics; friction and wear; ductile failure; strengthening mechanisms; embrittlement modes; case studies in materials selection. PREREQUISITE: MECH 3320.

7365-8365. Corrosion. (3). Fundamental causes and mechanisms; corrosion control; study of specific corrosion problems. PREREQUISITE: MECH 3320.

7371-8371. Advanced Mechanical Vibrations. (3). Modeling of linear and nonlinear vibrational systems; control, measurement, and stability of vibrational systems. PREREQUISITES: MECH 6371, 7342-8342.

7374-8374. Theory of Elasticity. (3). Classical theory using tensor notation; analysis of stress, strain, constitutive relationship; equations of compatibility, variational methods; methods of solution; applications. PREREQUISITE: MECH 7302-8302.

7375-8375. Theory of Laminated Plates. (3). Energy formulation of governing equations for general laminated plates made of fiber-reinforced composites; bending under transverse loading, stability under compression or shear loading, and free vibrations; effects of free edges, shear deformation, thermal loading and swelling; cylindrical bending of sandwich plates.

7378-8378. Introduction to Computational Fluid Dynamics. (3). Introduction to computational fluid mechanics and heat transfer, finite difference and finite volume methods, stability consideration, basics of numerical computation and analysis of model equations and fluid dynamics equation.

7379-8379. Advanced Computational Fluid Dynamics. (3). Advanced introduction to state-of-the-art of computational fluid dynamics; advanced grid generation, numerical schemes, and numerical boundary conditions; numerical computation of compressible inviscid and viscous flows, turbulence modeling, skill of post data process.

7381-8381. Finite Element Methods. (3). General principles and modeling of engineering systems using the finite element method; applications in fracture mechanics, hydrodynamics, and thermal conduction. PREREQUISITES: MECH 3341, 7341-8341.

7901-7909-8901-8909. Special Topics In Mechanical Engineering. (1-3). Topics are varied and announced in the *Schedule of Classes*.

7991-8991. Research Proposal. (1-3). Exhaustive literature search and presentation of both written and oral proposals on engineering topics under supervision of instructor.

†7992. Research Project. (1-6). Independent research investigation of engineering problem under supervision of instructor for students in non-thesis option; both written and oral reports required.

†7996. Thesis. (1-6).

†9000. Dissertation. (1-12).

† Grades of S, U, or IP will be given.

WE HAVE HUNGER OF THE MIND WHICH ASKS FOR KNOWLEDGE OF ALL AROUND US, AND THE MORE WE GAIN, THE MORE IS OUR DESIRE; THE MORE WE SEE, THE MORE ARE WE CAPABLE OF SEEING.

— MARIA MITCHELL, *LIFE, LETTERS AND JOURNALS*

THE SCHOOL OF AUDIOLOGY AND SPEECH-LANGUAGE PATHOLOGY

MAURICE I. MENDEL, Ph.D.,
Dean

DAVID J. WARK, Ph.D.,
Coordinator of Graduate Studies

I. The School of Audiology and Speech-Language Pathology offers graduate programs leading to the M.A. and Ph.D. degrees with a major in Audiology and Speech Pathology. Concentrations are available in Audiology and Speech Pathology. The School has Educational Services Board and Professional Services Board accreditation from the American Speech-Language Hearing Association.

II. M.A. Degree Program

A. Program Admission

All applications will be reviewed by the admissions committee. Students should have a GPA of 3.00 (on a 4 point scale) and a GRE of 900 (verbal plus quantitative). Applicants are encouraged to submit up to three letters of recommendation directly to the department's coordinator of graduate studies. Although applications may be submitted at any time, likelihood of acceptance and financial assistance for the fall semester is greater for applications received prior to March 1.

Students are expected to be proficient in understanding and use of English.

B. General Program Requirements

Students must complete a minimum of 47 credit hours and meet the academic and practicum requirements for the Certificate of Clinical Competence of the American Speech-Language-Hearing Association.

1. 36 semester hours of graduate work exclusive of thesis, special project, and clinical practicum with 24-30 semester hours in the major area.

2. Completion of three hours of clinical practicum (AUSP 7104 for Audiology majors and AUSP 7208 for Speech Pathology majors) in each semester of full-time graduate study. Students must complete a minimum of nine semester hours of clinical practicum with a grade of B or above and must obtain a B or above in their last two semesters. Maximum of 8 credit hours of AUSP 7104/7208 may be counted toward 47 hour requirement.

3. A thesis or non-thesis option is available. Students choosing the non-thesis option must take AUSP 7990 (Special Project) and complete written comprehensive examinations.

C. Specific Program Requirements

Assumed Background in Basic Science Course work (12 hours)

Can be taken at The University of Memphis.

a. Biological/Physical Science (3)

b. Mathematics (3)

c. Behavioral/Social Science (6)

Audiology

1. Assumed Background Coursework (15 hours)

Can be taken at The University of Memphis.

a. Basic communication Processes: Normal Speech/Language development (3); Other (3).

b. Speech-Language Pathology: Language Disorders (children or adult) (3); Other (3).

c. Related coursework (3).

2. Audiology Program (47-50 hours)

a. Basic Science Coursework (9 hours)

AUSP 7001 Hearing Science

AUSP 7004 Anatomy and Physiology of the

Hearing Mechanism

AUSP 7012 Measurement Techniques

b. Major Area Coursework (35-37 hours)

AUSP 7101 Audiological Concepts

AUSP 7103 Differential Audiology I

AUSP 7104 Clinical Practicum

AUSP 7105 Differential Audiology II

AUSP 7113 Rehabilitative Strategies and

Hearing Conservation in Adults

AUSP 7114 Introduction to Hearing Aids

AUSP 7115 Evaluation and Management

of Hearing Impaired Children

AUSP 7116 Hearing Aid Selection

AUSP 7125 Hearing Impairment and Aging

AUSP 7990 Special Project Or

AUSP 7996 Thesis

c. Supplemental Coursework (3 hours)

AUSP 7500 Evaluating Research in Communication Disorders

d. Proficiency in Manual Communication

AUSP 7123 Manual Communication Speech Pathology

1. Basic Communication Processes (ASHA: 15 hours; the university: 9 hours - AUSP 7000, 7006, and 7007)

AUSP 7000

Speech and Hearing Science

AUSP 7002

Seminar in Speech and Hearing

AUSP 7003

Anatomy and Physiology of the

Speech Mechanism

AUSP 7006

Language and Speech

AUSP 7007

Communicative Interaction

AUSP 7008

Acoustic Phonetics

AUSP 7010

Neurological Bases of

Communication

AUSP 7011

Psycholinguistics

AUSP 7014

Physiological Phonetics

AUSP 7016

Socio-cultural Bases of

Communication

AUSP 7017

Microcomputers in Speech and

Hearing Science

2. Research Methods and Experiences (6 hours)

AUSP 7500

Evaluating Research in

Communication Disorders

AUSP 7990

Or

AUSP 7996

Thesis

3. Speech Disorders (ASHA: 6 hours minimum)

AUSP 7201

Cleft Palate and Craniofacial

Disorders

AUSP 7202

Motor Speech Disorders in

Children

AUSP 7203

Voice Disorders

AUSP 7204

Phonological Disorders

AUSP 7205

Stuttering

AUSP 7206

Motor Speech and Swallowing

Disorders in Adults

AUSP 7210

Seminar in Speech Pathology

AUSP 7309

Speech Rehabilitation for

Head/Neck Pathologies

4. Language Disorders (ASHA: 6 hours minimum)

AUSP 7300

Language Disorders in Children

AUSP 7302

Language Disorders in Adults I

AUSP 7303

Language Disorders in Adults II

AUSP 7304

Seminar in Language Disorders

AUSP 7305

Language Learning Disabilities

AUSP 7306

Management Issues in Adult

Neurogenic Disorders

5. Other Major Professional Coursework

AUSP 7207

Assessment and Diagnosis

of Speech Pathologies

AUSP 7210

Seminar in Speech Pathology

AUSP 7308

Augmentative Communication

Intervention with Parents and

Families of the Communicatively

Impaired

AUSP 7123

Manual English I

AUSP 7501

Phonetic Transcription

AUSP 7502

Administrative Issues in

Professional Practice

6. Audiology (6 hours)

AUSP 7101

Audiological Concepts

AUSP 7122

Aural Rehabilitation

7. Clinical Practicum (9-12 hours)

AUSP 7200

Introduction to Clinical Practice in

Speech-Language Pathology

AUSP 7208

Clinical Experience in Speech and

Language Disorders

III. Teacher Certification Requirements

Requirements for teacher certification are under review. Please see the academic adviser.

IV. Ph.D. Program

A. Program Admission.

Students must have a GPA of 3.5 (on a 4 point system), a GRE score of 1000, (combined quantitative and verbal scores), three letters of recommendation, and a resume including a brief statement of professional goals. All applicants are reviewed by the School's student admissions and review committee. Most students will advance a Master's degree upon admission but this is not a requirement.

Exceptions to the above requirements will be taken under advisement by the student admissions and review committee.

B. General Program Requirements:

1. Advisers: An academic adviser will be appointed in consultation with each student to take into account personal and professional goals. Upon admission each doctoral student will be assigned an adviser by the Coordinator of Graduate Studies in consultation with the student. This adviser will serve as the chair of the student's planning committee. The adviser shall be a member of the graduate faculty of The University of Memphis.

2. Planning Committee: The planning committee's charge is to evaluate the student's academic and clinical needs and assist in the planning of the doctoral student's academic program. The academic plan will be tailored to accommodate the individual student's academic interests, background and professional goals. The committee will recommend to the Graduate School those courses, if any, to be transferred to apply toward the Ph.D., provided that the credit meets general university requirements. The committee, all of whom must be members of the graduate faculty, shall number no less than three, at least two of whom shall be from the student's area of concentration. The student, in conjunction with the committee, will develop a final academic plan to be in written form and filed in the dean's office. This plan is to be signed by each member of the committee and the doctoral student. The plan must be filed no later than the middle of the second semester. The student or a planning committee member may propose changes after the plan has been filed. However, any resulting change in the student's plan will require written approval of the committee and the doctoral student.

C. Areas of Concentration.

1. Audiology.

a. Credit Hour Requirements: Requirements for the doctoral degree shall be no less than 90 semester hours beyond the bachelor's degree. Forty-five to fifty-four hours must be taken in the student's area of Audiology. At least 21 hours shall be taken in Audiology at The University of Memphis of which a maximum of nine hours of dissertation may be counted.

Students will be required to complete 15 to 24 semester hours of work in order to satisfy research tool requirements. Courses that may satisfy such requirements include those in statistics, research design, instrumentation, and computer programming. The area of concentration plus the research tools must total a minimum of 69 hours.

Twelve semester hours will be required from collateral areas. A collateral area is defined as a combination of courses based on substantive commonality that may involve work in more than one academic department. A minimum of two collateral areas must be represented in the student's academic plan. At least six semester hours of the student's collateral work must be taken in departments outside of Audiology and Speech Pathology. Semester hours applying to collateral areas that are taken in the School of Audiology and Speech-Language Pathology shall not be counted toward the hours contributing to the student's concentration area.

b. Doctoral Experience Requirements: Doctoral students will be expected to either complete the requirements for the American Speech-Language-Hearing Association Certificate of Clinical Competence and complete an additional advanced training experience or complete a work in an active research laboratory with the help

and advice of the laboratory director. In this case the student will produce a product that is submitted for publication or presentation at a national professional/scientific meeting. The doctoral experience requirement will be determined by the student's planning committee in conjunction with the student. All students will have a weekly 15-hour doctoral experience assignment in addition to the seminar coursework.

c. **Qualifying Committee.** The qualifying committee will consist of members selected by the student in conjunction with the adviser. The committee will be made up of at least three members from the student's concentration area, one from a collateral area outside the School of Audiology and Speech-Language Pathology, and one from the area of statistics and research design.

d. **Qualifying Examination.** The qualifying examination will consist of a written and oral examination. The written examination will entail 24 hours of writing, within a one-week period. The examination will cover the student's concentration area, statistics/research design, instrumentation, and at least one collateral area. The qualifying committee will determine the readiness of the student for the written examination. The oral examination shall be established within three weeks after the successful conclusion of the written examination. Prior to the oral examination, the student will meet with individual committee members concerning the nature of the oral examination. The oral examination will entail further coverage of the areas represented in the student's written examination.

The qualifying examination may be taken upon completion of the doctoral student's academic plan or within the last semester of completing his or her academic requirements. This examination will be administered any time within the specified semester subject to the discretion of the qualifying committee. The student's status relative to the qualifying examination shall be determined by the chair shall file with the dean's office a decision in writing concerning the student's qualifying examination within two weeks after the oral examination.

e. **Candidacy.** After completion of all academic requirements and successful completion of the qualifying examination, a doctoral student may apply for candidacy.

f. **Dissertation Committee.** The dissertation committee will consist of a minimum of four faculty members selected by the student in consultation with the dissertation advisor. At least two members must be from the student's area of concentration and at least one member must be from a department outside the School of Audiology and Speech-Language Pathology. The chair of the dissertation committee must be from the student's concentration area and must be a full member of the graduate faculty.

g. **Dissertation.** The student will develop a prospectus in conjunction with the dissertation committee chair. The prospectus will be reviewed for approval by the committee. The number of credits that will apply towards the degree will range from 6 to 9. This will be determined by the committee based on the scope of the prospectus. After approval the student will conduct the work set forth in the prospectus. The completed dissertation will be defended by the student. The oral defense will be open to the University community, with voting on the acceptability of the defense restricted to dissertation committee members. An announcement of the scheduled defense must be sent to the dean of the Graduate School one month prior to the scheduled date. An affirmative decision will be rendered if no dissenting vote from the committee is cast. After successful defense any required revision, retyping, and resubmission of the dissertation to the committee chair must be completed prior to the awarding of the degree.

2. Speech Pathology

a. **Credit Hour Requirements.** Requirements for the doctoral degree shall be no less than 90 semester hours beyond the bachelor's degree. At least 45 hours must be taken in the Speech Pathology. At least 21 of those hours shall be taken within the Pathology of which a maximum of nine hours of dissertation may be counted. Students will be required to complete 12 to 15 semester hours of work in order to satisfy research tool requirements by taking courses in statistics, research design, and computer programming.

Eighteen semester hours will be required from collateral areas. A collateral area is defined as a combination of courses based on substantive commonality that may involve work in more than one academic department. A minimum of two collateral areas must be represented in the student's status. At least nine semester hours of the student's collateral work must be taken in departments outside of The School of Audiology and Speech-Language Pathology. Semester hours applying

to collateral areas that are taken in the School of Audiology and Speech-Language Pathology shall not be counted toward the hours contributing to the student's concentration area.

b. **Doctoral Experience Requirements.** Speech Pathology doctoral students are expected to demonstrate the skills necessary to complete successfully the degree requirements within the first two semesters of study. Students must have no grade less than a C- in all coursework. Students must also demonstrate proficiencies in the areas of research, instruction, and/or clinical service in their 16-20 weekly hours of assigned departmental responsibilities. Students performance will be evaluated by a departmental committee that will forward recommendations to the planning committee. The planning committee, in conjunction with the student, will make academic and clinical recommendations for the degree plan and subsequent doctoral experiences.

c. **Qualifying Committee.** The qualifying committee will consist of members selected by the student in conjunction with the adviser. The committee will be made up of at least three members from the School of Audiology and Speech-Language Pathology, one from a collateral area outside the School of Audiology and Speech-Language Pathology, and one from the area of statistics and research design.

d. **Qualifying Examination.** The qualifying examination will consist of a written and oral examination. The written examination will entail 24 hours of writing within a two-week period. The examination will cover the student's concentration area and both collateral areas. The student may be asked questions calling for direct application of statistics and research design. The qualifying committee will determine the readiness of the student for the oral examination, the date of which shall be established within three weeks after the successful conclusion of the written examination. Prior to the oral examination, the student will meet with individual committee members concerning the nature of the oral examination. The oral examination will entail further coverage of the areas represented in the student's written examination.

The qualifying examination may be taken upon completion of the doctoral student's academic plan or within the last semester of completing or her academic requirements. This examination will be administered any time within the specified semester subject to the discretion of the qualifying committee. The student's status relative to the qualifying examination shall be determined by the committee after the oral examination. This determination will be based on the student's qualifying examination within two weeks after the oral examination.

e. **Candidacy.** After the completion of all academic requirements and successful completion of the qualifying examination, a doctoral student may apply for Candidacy.

f. **Dissertation Committee.** The dissertation committee will consist of a minimum of four faculty members selected by the student in consultation with the dissertation advisor. At least two members must be from the School of Audiology and Speech-Language Pathology and at least one member must be from a department outside the School of Audiology and Speech-Language Pathology. The chair of the dissertation committee must be from the student's concentration area and must be a full member of the graduate faculty.

g. **Dissertation.** The student will develop a prospectus in conjunction with the dissertation committee chair. The prospectus will be reviewed for approval by the committee. After approval the student will conduct the work set forth in the prospectus. The completed dissertation will be defended by the student. The oral defense will be open to the University community, with voting on the acceptability of the defense restricted to dissertation committee members. An announcement of the scheduled defense must be sent to the dean of the Graduate School one month prior to the date. An affirmative decision will be rendered if no dissenting vote from the committee is cast. After successful defense any required revision, retyping, and resubmission of the dissertation to the committee chair must be completed prior to the awarding of the degree.

VS915 AUDIOLOGY AND SPEECH PATHOLOGY (AUSP) BASIC SCIENCE AREA

7000-8000. **Speech and Hearing Science.** (3). Comprehensive survey of experimental phonetics; detailed discussion of anatomy, physiology, acoustics, and perception as they relate to production, transmission, and intelligibility of the speech signal.

7001-8001. **Hearing Science.** (3). Basic acoustics, psychoacoustics and physiological acoustics.

7002-8002. **Seminar In Speech and Hearing Science.** (3). For upper level masters and all doctoral students. Topics include: acoustic phonetics, physiological phonetics, voice science and hearing science. For topic to be offered see the *Schedule of Classes*. PREREQUISITE: 7000 or 7001 or permission of instructor.

7003-8003. **Anatomy and Physiology of the Speech Mechanism.** (3). Structure and function of bodily organs related to the processes of speech production.

7004-8004. **Anatomy and Physiology of the Hearing Mechanism.** (3). Structure and function of outer, middle, inner ear, and auditory neural pathways; formation of auditory system in context of general prenatal development.

7006-8006. **Language and Speech Development.** (3). Normal acquisition and maintenance of speech and language, theoretical formulations about language and speech behavior, and approaches to its study. Students observe and describe the language of children of various ages whose development is within normal range.

7007-8007. **Communicative Interaction.** (3). Concepts and processes fundamental to communicative interaction. Emphasis on application of such concepts and processes to the student's own communicative interactions.

7008-8008. **Acoustic Phonetics.** (3). Acoustic theory of speech production and techniques of acoustic analysis; acoustic structure of vowels and consonants as well as prosodic features; and speech synthesis and speech perception. Discussions and demonstrations of basic instrumentation used to measure speech parameters. PREREQUISITE: 7000 or permission of instructor.

7010-8010. **Neurological Bases of Communication.** (3). Review of the neuroanatomy of the central and peripheral nervous systems and the physiology of nerves and muscles. Attention on cortical and subcortical structures and on neuropsychological processes which are attributed to speech and/or language functions.

7011-8011. **Psycholinguistics.** (3). Historical and recent trends in linguistics; relationship between brain, language, and cognition; knowledge and processes involved in speaking and listening. Topics include nature of mental representations and organization of knowledge; speech perception lexical, sentence, and discourse processing; speech and language production.

7012-8012. **Measurement Techniques.** (3). Principles and techniques involved in measurement procedures frequently encountered in the practice of Audiology. Major focus will be on the topics of calibration, measurement of environmental noise, and measurement of electroacoustic characteristics of hearing aids. Laboratory experience is provided. PREREQUISITE: 7001 and 7101 or permission of instructor.

7013-8013. **Psychoacoustics.** (3). Modern theoretical and applied research concerning the psychological responses to acoustic stimuli.

7014-8014. **Physiological Phonetics.** (3). Normal speech and voice physiology and speech motor theory; discussions and demonstrations of acquisition of valid and reliable speech kinematic and aerodynamic data and subsequent analysis. PREREQUISITES: AUSP 7000 or permission of instructor.

7016-8016. **Socio-cultural Bases of Communication.** (3). Influences of socio-cultural factors such as age, religion, ethnicity, socio-economic status and geographic region, on communication; emphasis on cross-cultural communication in educational and health-care settings.

7017-8017. **Microcomputers in Speech and Hearing Science.** (3). Number systems; programming concepts; interfacing components; analog-digital and digital-analog conversions; digital processing of speech and other signals; and computer hardware systems and peripherals with particular application in speech and hearing research. For doctoral and upper level master's students.

8015. Instrumentation. (3). The measurement and calibration of instrumentation typically used in speech and hearing science along with a discussion of pertinent electroacoustic principles.

AUDIOLOGY

6100. Introduction to American Sign Language. (3). Introduction to structure of American Sign Language; manual alphabet and basic vocabulary; practical applications including communication with deaf individuals and signing in the performing arts.

7101-8101. Audiological Concepts. (3). Basic audiological concepts and their applicability to clinical procedures; topics include pure-tone air and bone conduction procedures, clinical masking, speech threshold and recognition testing, acoustic immittance, and acoustic reflex testing; laboratory exercises included.

7103-8103. Differential Audiology. (3). Audiologic test design and interpretation through the study of behavioral diagnostic auditory tests, immittance audiometry, and otoacoustic emissions. PREREQUISITES: 7004, 7101, 3 hours of 7104, or permission of instructor.

7104-8104. Clinical Experience in Audiology. (3). Supervised clinical experience in the evaluation and/or management of clients with hearing impairments. Designed to meet student's individual needs.

7105-8105. Advanced Differential Audiology. (3). Electrophysiological techniques in differential diagnosis of nonorganic, peripheral, and central hearing disorders; electronystagmography (ENG) technique and interpretation. PREREQUISITE: 7103 or permission of instructor. COREQUISITE: 7104.

7112-8112. Seminar In Audiology. (3). Detailed study of selected topics in audiology. With different content, may be repeated for up to 12 hours at the 8000 level. PREREQUISITE: Permission.

7113-8113. Rehabilitative Strategies and Hearing Conservation In Adults. (3). Aural rehabilitation programs for the adult hearing impaired individual; topics include assessment of handicap, establishment and evaluation of group and individual remediation programs, assistive listening devices, cochlear implants with adults; establishment of hearing conservation programs in industry; workmen's compensation and federal and state legislation.

7114-8114. Introduction to Hearing Aids. (3). Performance and measurement of wearable hearing aids; characteristics of hearing aids, standard and nonstandard hearing aid performance measurements, earmold acoustics, laboratory exercises. PREREQUISITE: 7101 or permission of instructor.

7115-8115. Evaluation and Management of Hearing-Impaired Children. (3). Audiologic procedures of assessment and rehabilitation of pediatric population; hearing loss associated with birth defects and effects of hearing loss on speech and language development. PREREQUISITE: 7101 or permission of instructor.

7116-8116. Hearing Aid Selection. (3). Traditional and contemporary methods of hearing aid selection and evaluation; behavioral and objective procedures for children and adults. Laboratory exercises required. PREREQUISITE: 7114 or permission of instructor.

7117-8117. Individual Study In Audiology for Speech Pathologists. (3). Topics include physics of sound, hearing loss, basic audiometric testing and hearing conservation.

7122-8122. Aural Rehabilitation. (3). Introduction to rehabilitative procedures for hearing-impaired children and adults; topics include minimal hearing loss, auditory perception of speech, amplification, speech and language behaviors, psychosocial problems, educational deficits and management. (re)habilitation programs for children and adults, and cochlear implants. Primarily for non-audiology majors. PREREQUISITE: 7101 or permission of instructor.

7123-8123. Manual English. (1). Acquisition of basic vocabulary and understanding of rules of Signed English, sign continuum; situational usage of both American Sign Language and Manual English.

7126-8126. Hearing Impairment and Aging. (3). Evaluation of interaction of hearing impairment and aging process; emphasis on hearing impaired elderly individual and impact on communication of physical, psychological, and social changes that occur with advancing age.

7700. Individual Readings In Audiology. (1-3). Independent study in literature in an area of audiology. May be repeated as often as desired.

7990. Special Projects. (3). Individual needs of students who wish to explore an area with faculty guidance. Students may pursue a pilot study. May be taken twice. PREREQUISITE: Permission of individual faculty member be involved.

†7996. Thesis. (1-3). Academic credit for thesis may be taken for a maximum of 6 hours and a minimum of 3 hours degree credit. Only 3 credits may be applied toward degree requirements for the master's degree.

8100. Individual Readings In Audiology. (1-6). Independent study of literature in an area of audiology. May be repeated as often as desired.

8121. Individual Projects In Audiology. (1-6). Students pursue individual research projects under the direction of a member of the graduate faculty in audiology. May be repeated as often as desired.

8124. Clinical Supervision in Audiology. (1). Processes involved in supervision of student clinicians in diagnostic audiology and/or aural rehabilitation. Experience in supervision of M. A. Level student clinicians is provided.

8125. Clinical Internship in Audiology. (6). Minimum of 270 clock hours of supervised experience in clinical faculty encompassing administrative and patient management aspects of audiology. Written report required. PREREQUISITE: Certificate of clinical competence in Audiology; 48 hours toward the degree.

†9000. Dissertation. (1-6). Academic credit for dissertation may be taken for a maximum of 12 hours and a minimum of 1 hour credit. Only 3 credits may be applied toward degree requirements for the Ph.D. degree.

SPEECH AND LANGUAGE PATHOLOGY

7200. Introduction to Clinical Practice In Speech-Language Pathology. (2). Introduction to clinical practicum in speech and language disorders. For students without prior practical graduate experience in communication disorders. Normally taken concurrently with AUSP 7501.

7201-8201. Cleft Palate and Craniofacial Disorders. (3). Cleft palate speech with emphasis on articulatory, resonance, and phonatory aspects as well as medical and rehabilitative and rehabilitative principles. PREREQUISITE: 7003 and 7200 or permission of instructor.

7202-8202. Motor Speech Disorders In Children. (3). Speech deficits attributable to developmental neuromuscular disorder; etiologies and classifications of cerebral palsy, hormonal disturbances, myopathologies, and various genetic disorders; review of contemporary approaches to diagnosis and management of developmental dysarthria and apraxia; special problems associated with treating profoundly- and multiply-handicapped child.

7203-8203. Voice Disorders. (3). In depth review of voice disorders by patterns of deviation, etiology, and techniques of intervention. Opportunity for original papers and/or projects.

7204-8204. Phonological Disorders. (3). Current research in phonology, including assessment, prediction, and remediation procedures.

7205-8205. Stuttering. (3). Review, evaluation, and synthesis of information regarding the definition of stuttering, theories of etiology, symptomatology, therapy approaches, and methods of research.

7206-8206. Motor Speech and Swallowing Disorders In Adults. (3). Clinical diagnosis and management of adults with dysarthria, apraxia of speech, and neurogenic dysphagia.

7207-8207. Assessment and Diagnosis of Speech Pathologies. (3). Principles and procedures for assessment of speech and voice behaviors and differential diagnosis of pathology; review of techniques of vocal tract examination, and hands-on experience with acquisition and interpretation of clinical acoustic and physiologic data.

7208-8208. Clinical Experience in Speech and Language Disorders. (3). Supervised clinical practice with clients. Designed to meet student's individual needs.

7210-8210. Seminar In Speech Pathology. (3). Selected areas of speech or language disorders. With different content may be repeated for up to 6 hours at the 7000 level or for up to 12 hours at the 8000 level.

7300-8300. Language Disorders In Children. (3). Perceptual, social, and cognitive correlates of language disorders associated with specific language impairment, phonological disorders, mental retardation, autism, and hearing impairment; assessment, diagnosis, and treatment of language disorders in young children (0-6 years).

7302-8302. Language Disorders In Adults I. (3). Communicative and cognitive deficits associated with focal neurological disease; differential diagnosis, assessment, and management of adults with aphasia and right hemisphere communication disorders.

7303-8303. Language Disorders In Adults II. (3). Communicative and cognitive deficits associated with nonfocal neurological disease; differential diagnosis, assessment, and management of individuals with traumatic brain injury, dementia, and other disorders.

7304-8304. Seminar In Language Disorders. (3). Current experimental and clinical research of disorders of language. PREREQUISITE: Permission.

7305-8305. Language Learning Disabilities. (3). Assessment and treatment of spoken and written language disorders in school-age children and adolescents with special emphasis on the collaborative role of the speech-language pathologist in school-based settings; attentional and social deficits associated with language-learning disabilities.

7307-8307. Management Issues in Adult Neurogenic Disorders. (3). Review of specific management approaches to adult neurogenic patients in variety of healthcare settings; professional issues relating to efficacy of treatment, third party reimbursement, and roles and responsibilities of other health care professionals. PREREQUISITE: 7302 and 7303 or permission of instructor.

7308-8308. Augmentative Communication (3). Comprehensive overview of theoretical and practical issues related to use of augmentative and alternative communication (AAC) systems; assessment and intervention strategies for children and adults in need of AAC.

7309-8309. Speech Rehabilitation for Head/Neck Pathologies. (3). Etiology, disordered anatomy, and physiology resulting from cancer of head and neck; ways in which cancer, surgery, and other medical treatments affect speech and voice functioning and swallowing; diagnostic and treatment approaches.

7403-8403. Intervention With Parents and Families of the Communicatively Impaired. (3). Review and discussion of literature regarding parents and families of persons with communication impairments. Supervised practicum experiences with such parents and other family members are required.

7500. Evaluating Research In Communication Disorders. (3). (7005). Introduction to research applicable to speech pathology and audiology and theories of measurement, including statistical and behavioral designs, reliability and judgements, and replicability.

7501. Phonetic Transcription. (1). Broad and narrow transcription techniques and opportunities for transcription practice with normal and disordered populations.

7502-8502. Administrative Issues in Professional Practice. (3). Consideration of legal, ethical, financial, and personnel management issues associated with administration of clinical programs in Speech

and Hearing. Special emphasis given to private practice setting. Students required to complete project.

7800. Individual Readings in Speech Pathology. (1-3). Independent study of literature in an area of speech pathology. May be repeated as often as desired.

7990. Special Projects. (3). Students study a specific area under faculty guidance. May be taken twice. **PREREQUISITE:** Permission of individual faculty members to be involved.

†**7996. Thesis.** (1-3). Academic credit for thesis may be taken for a maximum of 6 hours and a minimum of

3 hours credit. Only 3 hours of credit may be applied toward degree requirements for the master's degree.

8200. Individual Readings in Speech Pathology. (1-6). Independent study of literature in an area of speech pathology. May be repeated as often as desired.

8221. Individual Projects in Speech Pathology. (1-6). Students pursue individual research projects under the direction of a member of the graduate faculty in speech pathology. May be repeated as often as desired.

8228. Clinical Supervision in Speech Language Pathology. (1). Processes involved in supervision of study clinicians in speech and language assessment and therapy. Experiences in supervision of M.A. Level student clinicians provided.

†**9000 Dissertation.** (1-9). Academic credit for dissertation may be taken for a maximum of 12 hours and a minimum of 1 hours credit. Only 9 hours may be applied toward degree requirements for the Ph.D. degree.

† *Grades of S, U, or IP will be given.*

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MEN AND WOMEN WHO NOT ONLY PERSUE THEIR
OWN PERSONAL INTERESTS BUT ALSO PREPARE TO
FULFILL THEIR SOCIAL AND CIVIC OBLIGATIONS.
AND IT IS DURING THE COLLEGE YEARS, PERHAPS
MORE THAN IN ANY OTHER TIME, THAT THESE
ESSENTIAL QUALITIES OF MIND AND CHARACTER
ARE REFINED.

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ADJUNCT MEMBERS

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CIVIL ENGINEERING

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ENGINEERING TECHNOLOGY

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Ph.D. (1986), Illinois Institute of Technology [1994].
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**SCHOOL OF AUDIOLOGY AND
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JOEL C. KAHANE, *Professor*
Ph.D. (1975), University of Pittsburgh [2000].
ALAN G. KAMHI, *Professor*
Ph.D. (1979), Indiana University [2000].
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M.A. (1980), Memphis State University [1997].
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M.D. (1980), Howard University Medical School [1997].
WILLIAM BERRY
Ph.D. (1971), Purdue University [1994].
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NANCY E. DAYTON
Ed.D. (1982), Memphis State University [1997].

A UNIVERSITY SHOULD NOT BE A WEATHER VAIN,
RESPONSIVE TO EVERY VARIATION OF POPULAR
WHIM. UNIVERSITIES MUST AT TIME GIVE SOCIETY,
NOT WHAT SOCIETY WANTS, BE WHAT IT NEEDS.
INERTIA AND RESISTANCE HAVE THEIR USES,
PROVIDED THEY BE BASED ON REASONABLE
ANALYSIS, ON A SENSE OF VALUES, NOT ON MERE
HABIT.

— ABRAHAM FLEXNER,
THE IDEA OF A MODERN UNIVERSITY

1995-96 TENTATIVE CALENDAR

This calendar is tentative, and students should check the 1994-95 *Graduate Catalog* and the *Schedule of Classes* for possible changes and/or additions.

FALL SEMESTER 1995

AUGUST 23: Meeting of the new university faculty, 8:30 A.M.

Meeting of entire university faculty, 10:30 A.M., followed by meetings of colleges and departments.

AUGUST 24: Faculty advising for Fall 1995 Registration.

AUGUST 25 and 28-29: FALL 1995 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

AUGUST 30: Classes begin.

SEPTEMBER 4: Holiday: Labor Day.

SEPTEMBER 5: Last day to add or to register for Fall 1995 courses.

SEPTEMBER 27: Last day for removing Summer Session "Incomplete" grades.

OCTOBER 13: Last day to drop courses.

Last day to withdraw from the university.

NOVEMBER 15: Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in May 1996.

NOVEMBER 23-26: Holiday: Thanksgiving.

DECEMBER 6: Classes end.

DECEMBER 7: Study Day.

DECEMBER 8-14: Final examinations.

DECEMBER 16: Commencement.

SPRING SEMESTER 1996

JANUARY 15: Holiday: Martin Luther King's Birthday.

JANUARY 16: Faculty advising for Spring 1996 Registration.

JANUARY 17-19: SPRING 1996 Regular Registration and Drop/Add. For detailed dates and times see the *Schedule of Classes*.

JANUARY 22: Classes begin.

JANUARY 25: Last day to add or to register for Spring 1995 courses.

JANUARY 30: Last day for removing Fall "Incomplete" grades.

MARCH 8: Last day to drop courses.

Last day to withdraw from the university.

MARCH 17-24: Spring Break.

MARCH 22: University offices will be closed for Spring Holiday.

APRIL 10: Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in August 1996.

MAY 1: Classes end, Faculty convocation.

MAY 2: Study Day.

MAY 3-9: Final examinations.

MAY 10: Commencement.

FIRST SUMMER TERM 1996

MAY 30: Faculty advising.

MAY 30-31: SUMMER 1996 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JUNE 3: Classes begin.

JUNE 4: Last day to add or to register for First Term courses.

JUNE 18: Last day to drop First Summer Term courses.

Last day for First Summer Term students to withdraw.

JUNE 24: Last day for removing Spring Semester "Incomplete" grades.

JULY 3: First Summer Term classes end.

JULY 4: Holiday: Independence Day.

JULY 5: First Summer Term final examinations.

SECOND SUMMER TERM 1996

JULY 8: SECOND SUMMER 1996 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JULY 9: Second Summer Term classes begin.

Last day to add or to register for Second Summer Term courses.

JULY 17: Last day for making application to the dean of the appropriate college for degrees to be conferred in December 1996.

JULY 24: Last day to drop Second Summer Term courses.

Last day for Second Summer Term students to withdraw from the university.

AUGUST 8: Second Summer Term classes end.

AUGUST 9: Second Summer Term final examinations.

AUGUST 11: Commencement.

EXTENDED SUMMER TERM 1996

MAY 30: Faculty advising.

MAY 30-31: SUMMER 1996 Regular Registration and Drop/Add. For detailed dates and times, see the *Schedule of Classes*.

JUNE 3: Classes begin.

JUNE 4: Last day to add or to register for Extended Term courses.

JUNE 24: Last day for removing Spring Semester "Incomplete" grades.

JULY 4-7: Independence Day and Summer Break.

JULY 5: Last day to drop Extended Summer Term courses.

Last day for Extended Summer Term students to withdraw from the university.

JULY 8: SECOND SUMMER 1996 Regular Registration and Drop/Add. For details, see the *Schedule of Classes*.

AUGUST 8: Extended Summer Term classes end.

AUGUST 9: Extended Summer Term final examinations.

AUGUST 11: Commencement.

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EVER SINCE THE DAWN OF CIVILIZATION, PEOPLE
 HAVE NOT BEEN CONTENT TO SEE EVENTS AS
 UNCONNECTED AND INEXPLICABLE. THEY HAVE
 CRAVED AN UNDERSTANDING OF THE UNDERLYING
 ORDER OF THE WORLD...HUMANITY'S DEEPEST
 DESIRE FOR KNOWLEDGE IS JUSTIFICATION ENOUGH
 FOR OUR CONTINUING QUEST.

— STEVEN HAWKING





The University of Memphis

ADMISSION APPLICATION FOR PROGRAMS IN THE GRADUATE SCHOOL

Categories of Admission

Graduate Master's Admission

This category is for applicants who have met all university and departmental admission requirements and have been formally admitted to a specific graduate program for the purpose of earning a master's degree.

Doctoral Admission

This category is for applicants who have met all university and departmental admission requirements for early doctoral admission and have been formally admitted to a specific graduate program for the purpose of earning a doctoral degree.

Graduate Non-Degree Status

Graduate non-degree status is for students who hold a bachelor's or master's degree from an accredited college or university and wish to take course work at the graduate level. Graduate non-degree students may enroll in selected graduate courses. This status will not allow an applicant to earn a degree. Applicants wishing to take courses for professional certifications may find this a desirable status.

Combination Senior/Graduate Status

This category is for undergraduate students who wish to enroll in graduate course work while completing the last semester of a baccalaureate degree. Applicants must have at least a 3.25 grade point average (GPA). The Combination Senior/Graduate student is not admitted to a specific graduate degree program.

Deadlines for new Graduate Applications

Fall Semester — August 1
Spring Semester — December 1
Summer Semester — May 1

Specific programs may have earlier deadlines. Some programs make once per year admissions decisions. Please contact the department for program admission requirements.

General Instructions

The following documents must be sent to:

GRADUATE ADMISSIONS THE UNIVERSITY OF MEMPHIS MEMPHIS, TN 38152

- (1) Completed application with \$5.00 non-refundable fee.
- (2) Official transcripts of graduate and undergraduate credit sent by each institution the applicant has attended. The transcripts must be sent directly to Graduate Admissions. Personal copies are not accepted as official documents.
- (3) Official scores from admissions tests must be sent directly to Graduate Admissions. Tests used by various programs at the University are the Graduate Record Examination (GRE), the Graduate Management Admissions Test (GMAT) and the Miller Analogies Test (MAT). Please check with the specific program to see which test is required for your desired area of study.



The University of Memphis

APPLICATION FOR GRADUATE ADMISSION

Memphis, Tennessee 38152
Office of Graduate Admissions (901) 678-2911

Please complete every item on this form, sign and date the application, and return it with a \$5.00 non-refundable graduate application fee unless the fee has been previously paid for Graduate Admission.

U.S. SOCIAL SECURITY NUMBER _____	For Office Use Only Receipt Number: _____	206
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DO NOT WRITE IN SPACE BELOW

FULL LEGAL NAME (Please print) _____	2U6
Last _____ First _____ Middle/Maiden _____ Suffix _____	

Perm State 2U6

Perm Cntry 2U6

Citz Cntry 2U6

PERMANENT HOME ADDRESS _____	2U6/007
Street Address: _____	
City: _____ State: _____ Zip: _____ Country: _____	
(Area Code) Phone Number: _____ TN-County: _____	

Ethnic Org 2U6

Relationship 2U6

NOK State 2U6

NOK Cntry 2U6

BIRTHDATE ____/____/____ BIRTH PLACE _____	2U6/007
Mo. Day Year City Country	
SEX (Circle One) Male Female	
RACE (Circle one below)	
Asian or Pacific Islander American Indian or Alaskan Native African American—non Hispanic Hispanic White	
Are you a CITIZEN of the U.S.? (Circle one) Yes No	
If no, what is your country of CITIZENSHIP and your VISA type? _____	
Country VISA Type	

College 2U6

Degree 2U6

Major 2U6

Conc 2U6

Term 2U6

PARENTS, GUARDIAN, SPOUSE, NEXT OF KIN (to notify in case of emergency)	2U6
Name _____	
Street Address: _____	
City: _____ State: _____ Zip: _____ Country: _____	
(Area Code) Phone Number: _____ Relationship: (Circle one): Parent Guardian Spouse Other	

Req Rule 2U6

Residency 2U6

Class 2U6

AOI 2U6

ADMISSION PROGRAM INFORMATION
Preferred Admission Semester: (Circle one) Fall Spring Summer Year: _____
Degree Seeking Applicant:
What Degree? (Circle one) Master's Doctoral Education Specialist
Department name: _____
Major in that department: _____
Concentration within that major: _____
Non-Degree Seeking Applicant:
Taking courses for (Circle one) credit audit
Undergraduate seeking Combination Senior/Graduate status? (Circle one) Yes No
Taking courses for teacher certification? (Circle one) Yes No
Have you ever applied for graduate admission into this University? Yes No
(If yes, indicate Term and Year of last application: _____)
Have you ever taken graduate course work at this University? Yes No
(If yes, indicate Term and Year of last enrollment: _____)

Draft 2U6

Regist Type 2U6

Admit Type 2U6

Birth Cntry 2U6

MAT 208

GRE 208

GMAT 208

Changeover 208

TEST DATA Indicate which of the following Admission tests you have taken or plan to take and the date	208
GRE General: _____ Date: _____	GMAT: _____ Date: _____
GRE Subject: _____ Date: _____	MAT: _____ Date: _____

PREVIOUS COLLEGE/UNIVERSITY WORK (List ALL previous colleges/universities, including The University of Memphis. If you require more space, please provide the information on an attached sheet.)

DO NOT WRITE IN SPACE BELOW

Full Name of College	City & State	Dates of Attendance (From-To Month/Year)	Did you graduate? (Circle one)	If yes, Degree Earned & Date
211		-	No Yes	212
		-	No Yes	
		-	No Yes	
		-	No Yes	
		-	No Yes	
		-	No Yes	
		-	No Yes	
		-	No Yes	

College 211
 Collaga 211
 Collaga 211
 Collaga 211
 Collaga 211
 Collaga 211
 Collaga 211
 Collaga 211
 Collar

Please print your name as it appears on your transcripts:

If you have not yet graduated, what is the proposed date of your graduation?

RESIDENCY

STUDENTS WILL NOT GAIN RESIDENT CLASSIFICATION AT THE UNIVERSITY BY PRESENCE AS A STUDENT IN THE STATE OF TENNESSEE.

Have you always lived in Tennessee? (Circle one) Yes No. If no, when did you move to Tennessee? _____

Why did you move to Tennessee (for example, active duty military, employment, education, etc.)? _____

Do you plan to be a full-time or part-time student? (Circle one) Full-time Part-time

Are you employed? (Circle one) Full-time Part-time Not employed

If employed, provide name and address of employer:

Place of Employment	Dates of Employment	City	State	Phone Number
---------------------	---------------------	------	-------	--------------

SELECTIVE SERVICE CERTIFICATION

All male citizens of the United States of America between the ages of eighteen (18) and twenty-six (26) must be registered with the Selective Service prior to registering for classes at The University of Memphis. This requirement does not apply to veterans and others exempt by federal law. Indicate whether or not you have registered for the draft. (Circle one)

Yes No Exempt

Pursuant to the requirements of the College and University Security Information Act, Tenn. Code Ann. section 49-7-2200, an annual report of security information and statistics is available upon request. Contact the Assistant Dean of Students, Office of Judicial Affairs, Scates Hall, room 203, The University of Memphis, Memphis, Tennessee 38152, (901) 678-2298 to obtain any or all of the information. All other Student-Right-To-Know information is available in the Schedule of Classes each term.

I certify that none of the information on this form is false or has been withheld. I further certify that I understand that giving false information or withholding information may make me ineligible for admission or to continue my enrollment at The University of Memphis.

Signature _____ Date _____

Do Not Write Below This Line

STATEMENT OF PROCEDURE

All credentials become the property of the University and cannot be forwarded or returned.

NOTE: Credentials will be maintained in active files for a 12-month period. After this period, credentials will be relegated to inactive status and must be submitted again before an admissions decision can be made.

Admissions Action:

Approved: _____ Date: _____

Not Approved: _____ Date: _____

Campus Map

Frequently Visited Locations

- Admissions 36
- Admission Center 67
- Bookstore 4
- Cafeteria/Tiger Den 35
- Continuing Education 31
- Child Care Center 3
- Classroom Buildings 11
- Egyptian Hall 26
- Faculty Office 24
- Fogelman Executive Center 13
- Harris Auditorium 9
- Housing Office 31
- Parking Office 74
- Post Office 34
- Post Office 34A
- Public Safety 36

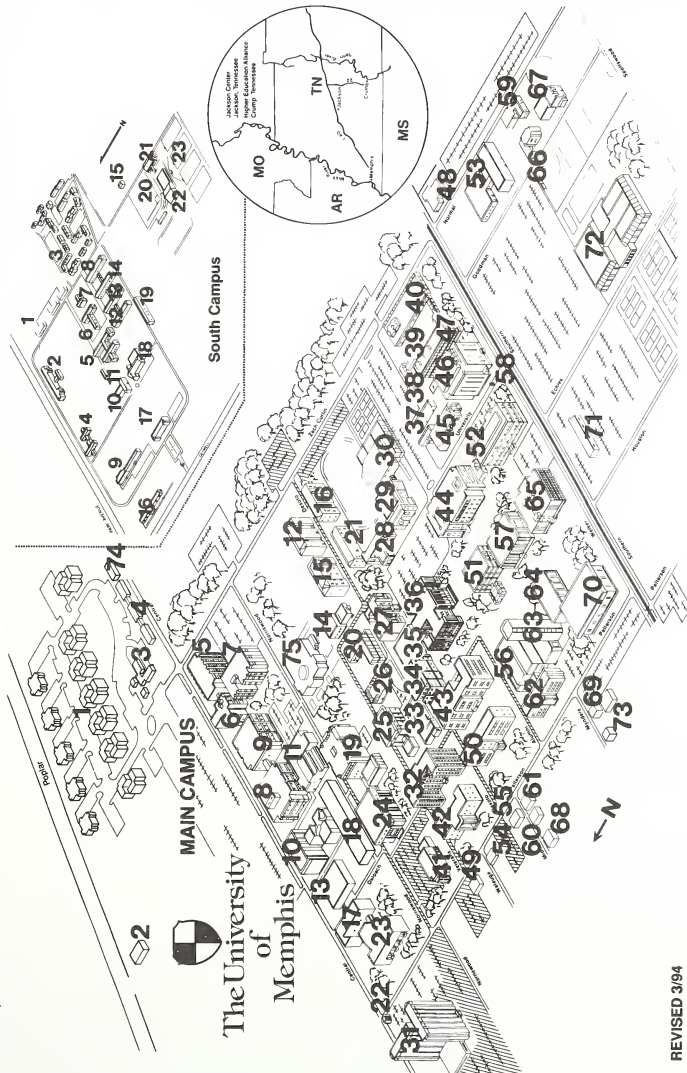
Main Campus

- Purchasing 36
- Recreation Center 72
- Theater 8
- Art Building 33
- Athletic Office Building 53
- Ball Education Building 47
- Broder Library 56, 64, 65
- Business School 40
- University Gallery 1
- Visitor Information Center 22
- Administration Building 36
- Administrative Offices 67
- Athletic Office Building 53
- Ball Education Building 47
- Broder Library 56, 64, 65
- Business School 40
- University Gallery 1
- Visitor Information Center 22
- Communication & Fine Arts 11
- Development Offices 67
- Domitories (see Residence Halls)
- Engineering Office 5
- Foreign Language Building 19
- Earthquake Center 4

- Library Tower 63
- Life Sciences 66
- Lipman Early Childhood School 2
- Manning Hall 27
- Meeman Journalism Building 25
- Music Hall 51
- Music Building 8
- New Library (under construction) 75
- Newport Hall 65
- Nursing: Classrooms 27 & 86, Offices 66
- Penhellen Building 41
- Printing Office 3
- Paterson English Building 70
- Physical Education Building 72

- Physical Plant & Piping 20
- Printing Services 71
- Psychology Building 54
- Psychology Housing 1
- Baptist Student Union 61
- Carthage House 49
- Church Street Apartments 54
- Jewish Student Union 66
- Muslim Student Center 73
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- Wesley House - Presbyterian 55
- Residence Halls
- Browning Hall 12
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- Myrdens Hall 43
- Richardson Towers 31
- Robson Hall 16
- Smith Hall 42
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- Wick Hall 56

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- Army 37, 39
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- Special Education 38
- Special Education 39
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- Student Union 44
- University Center 44
- Visitor Information Center 22



The University
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Memphis

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Deadlines for NEW graduate applications

Fall Semester	August 1
Spring Semester	December 1
Summer Semester	May 1



The University of Memphis

*The University of Memphis is an Equal Opportunity/Affirmative Action University.
It is committed to education of a non-racially identifiable student body.*