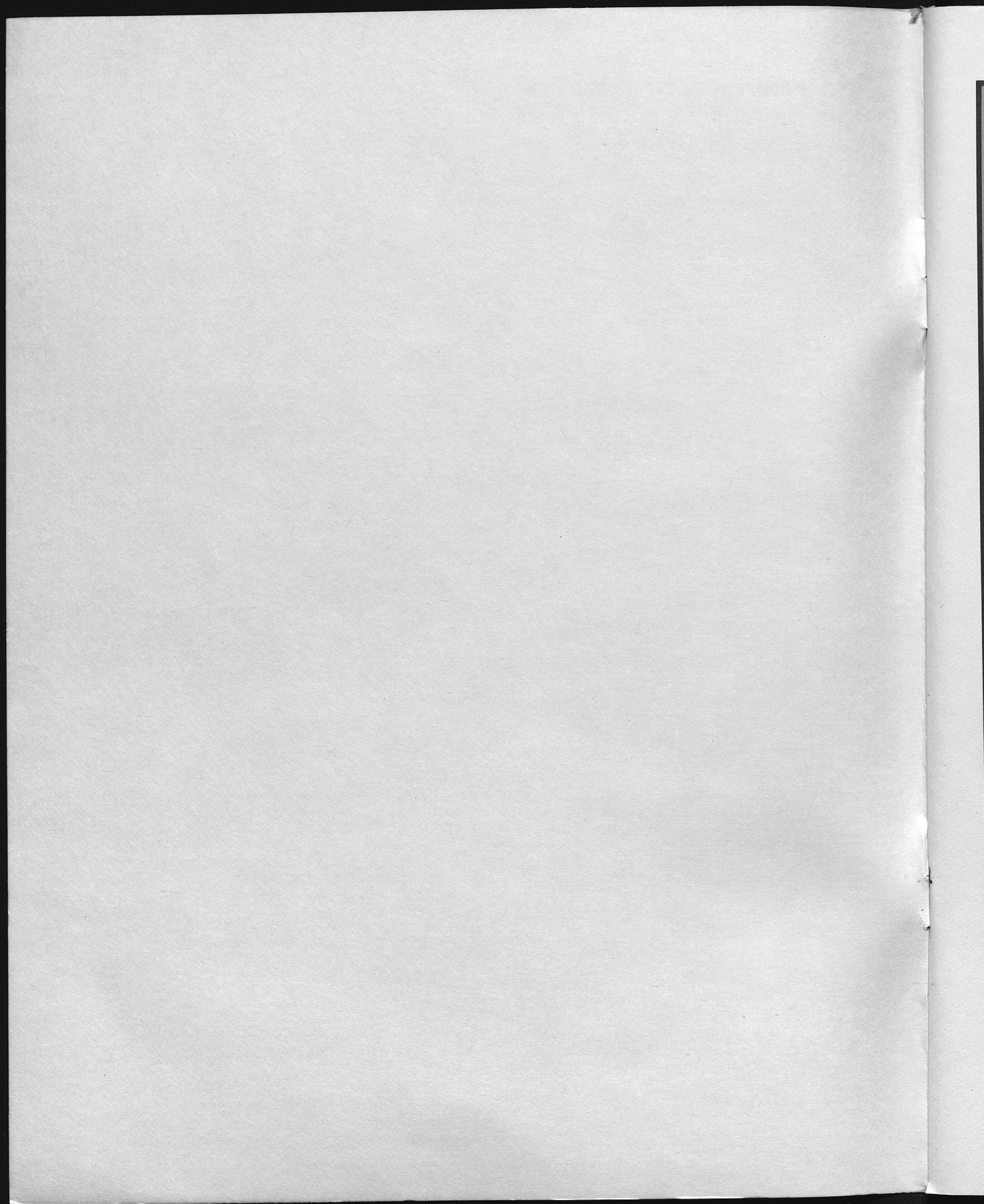


*University
of Kentucky
Bulletin*

The Graduate School 1978-79



Reference copy

University Archives
Margaret I. King Library - North
University of Kentucky
Lexington, Kentucky 40506



1978-79
The Graduate School
University of Kentucky Bulletin

VOLUME 70

SUMMER III 1978

NUMBER 4

The University of Kentucky Bulletin (USPS 384-610) published six times a year, once in the Spring, three times in the Summer (Summer I, Summer II, Summer III) and twice in the Fall (Fall I, Fall II) by the University of Kentucky, Lexington, Kentucky 40506. Second class postage paid at the Post Office, Lexington, KY 40511. Postmaster: Send address changes to The Graduate School. Attn: Mailing Center, University of Kentucky, Lexington, KY 40506. A Cooperative publication of The Graduate School and Publications Bureau, University Information Services.

Contents

Calendar	3
The Graduate School	6
Degree Requirements	25
Programs and Directors of Graduate Studies	31
The Graduate School Programs	33
Course Listings by Semesters	85
Index	89

Calendar

1978 FALL SEMESTER

June 15—Thursday—Deadline for applying for admission or readmission to The Graduate School for the 1978 Fall Semester

August 28—Monday—Registration for new students

August 29—Tuesday—Centralized add-drop for Advance Registered Students

August 30—Wednesday—Class work begins

August 30-September 6—Wednesday through Wednesday—Late registration for returning students who did not advance register and new applicants cleared late for admission. A \$20 late fee is assessed students who register late.

September 4—Monday—Labor Day—(Academic Holiday)

September 6—Wednesday—Last day to enter an organized class for the Fall Semester

September 13—Wednesday—Last day for payment of registration fees in order to avoid cancellation of registration

September 13—Wednesday—Last day for new students to pick up ID cards from Billings and Collections in order to avoid replacement fee

September 22—Friday—Last day for reinstatement of students who failed to pay registration fees

September 28—Thursday—Last day for filing an application for a December degree in College Dean's office

October 3—Tuesday—Last day to drop a course without a grade

October 3—Tuesday—Last day to change from credit to audit or from audit to credit

October 20—Friday—Last day to drop a course

October 20—Friday—Last day to withdraw from the University or reduce course schedule and receive any refund

October 30—Monday—Last day to pay thesis/dissertation fees for a December degree in Billings and Collections office

October 31—Tuesday—Deadline for applying for admission or readmission to The Graduate School for the 1979 Spring Semester

November 6-15—Monday through Wednesday—Advance registration for 1979 Spring Semester

November 21—Tuesday—Last day to schedule a final examination in The Graduate

School for candidates for a December 1978 degree

November 23-25—Thursday through Saturday—Thanksgiving Holidays (Academic Holidays)

December 5—Tuesday—Last day to sit for a final examination for candidates for a December, 1978 degree

December 13—Wednesday—End of class work

December 15-21—Friday through Thursday—Final Examinations

December 21—Thursday—Last day to submit a thesis/dissertation to The Graduate School for candidates for a December 1978 degree

December 21—Thursday—End of Fall Semester

December 26—Tuesday—Final deadline for submission of grades to the Registrar's Office, 12 noon.

1979 SPRING SEMESTER

January 15—Monday—Registration for new students

January 16—Tuesday—Centralized add-drop for advance registered students

January 17—Wednesday—Class work begins

January 17-23—Wednesday through Tuesday—Late registration for returning students who did not advance register and new applicants cleared for late admission. A \$20 late fee is assessed students who register late.

January 23—Tuesday—Last day to enter an organized class for Spring Semester

January 30—Tuesday—Last day for payment of registration fees in order to avoid cancellation of registration

January 30—Tuesday—Last day for new students to pick up ID cards from Billings and Collections in order to avoid replacement fee

February 8—Thursday—Last day for reinstatement of students who failed to pay registration fees

February 15—Thursday—Last day for filing an application for a May degree in College Dean's office

February 20—Tuesday—Last day to change from credit to audit or from audit to credit

February 20—Tuesday—Last day to drop a course without a grade

March 9—Friday—Last day to drop a course

March 9—Friday—Last day to withdraw from the University or reduce course schedule and receive any refund

March 19—Monday—Last day to pay thesis/dissertation fees for a May degree in Billings and Collections office

March 19-24—Monday through Saturday—Spring vacation (Academic Holidays)

April 1—Sunday—Last day to apply to Graduate Admissions Office for admission and readmission for all 1979 Summer Sessions

April 13—Friday—Last day to schedule a final examination in The Graduate School for candidates for May 1979 degree

April 16-25—Monday through Wednesday—Advance registration for 1979 Fall Semester and both Summer Sessions

April 25—Wednesday—Last day for Kentucky Teachers to submit all required documents to the Graduate Admissions Office for ad-

mission and readmission to all 1979 Summer Sessions

April 27—Friday—Last day to sit for a final examination for candidates for a May 1979 degree

May 4—Friday—Last day to submit dissertation to The Graduate School for doctoral candidates who wish to receive a diploma at Commencement

May 5—Saturday—End of class work

May 7-12—Monday through Saturday—Final Examinations

May 11—Friday—Last day to submit thesis/dissertation to The Graduate School for candidates for a May 1979 degree

May 12—Saturday—End of 1978 Spring Semester

May 15—Tuesday—Final deadline for submission of grades to the Registrar's Office, 12 noon.

June 15—Friday—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1979 Fall Semester.

1979 FOUR-WEEK INTERSESSION

April 1—Sunday—Last day to apply to the Graduate Admissions Office for admission and readmission to all 1979 Summer Sessions

April 25—Wednesday—Last day for Kentucky Teachers to submit all required documents to the Graduate Admission Office for admission and readmission to all 1979 Summer Sessions

May 14—Monday—Registration

May 15—Tuesday—Class work begins

May 18—Friday—Last day to enter an organized class for the Four-Week Intersession

May 23—Wednesday—Last day to drop a course without a grade

May 23—Wednesday—Last day to change from credit to audit or from audit to credit

May 28—Monday—Memorial Day (Academic Holiday)

May 29—Tuesday—Last day to drop a course

May 29—Tuesday—Last day to withdraw from the University or reduce course schedule and receive any refund

May 29—Tuesday—Last day to pay registration fees in order to avoid cancellation of registration

June 7—Thursday—Last day for reinstatement of students who failed to pay registration fees

June 12—Tuesday—Final Examinations

June 12—Tuesday—End of Four-Week Intersession

June 15—Friday—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1979 Fall Semester

June 15—Friday—Final deadline for submission of grades to the Registrar's Office, 12 noon.

1979 EIGHT-WEEK SUMMER SESSION

April 1—Sunday—Last day to apply to the Graduate Admissions Office for admission and readmission to all 1979 Summer Sessions

April 25—Wednesday—Last day for Kentucky Teachers to submit all required documents to the Graduate Admissions Office for admission and readmission to all 1979 Summer Sessions

June 13—Wednesday—Registration

June 14—Thursday—Class work begins

June 15—Friday—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1979 Fall Semester

June 18—Monday—Last day to enter an organized class for the 1979 Eight-Week Summer Session

June 27—Wednesday—Last day to pay registration fees in order to avoid cancellation of registration

June 28—Thursday—Last day for filing an application for an August degree in College Dean's office

July 2—Monday—Last day to change from credit to audit or from audit to credit

July 2—Monday—Last day to drop a course without a grade

July 4—Wednesday—Independence Day (Academic Holiday)

July 9—Monday—Last day for reinstatement of students who failed to pay registration fees

July 13—Friday—Last day to pay thesis/dissertation fees for an August degree in Billings and Collections office

July 13—Friday—Last day to drop a course

July 13—Friday—Last day to withdraw from the University or reduce course schedule and receive any refund

July 18—Wednesday—Last day to schedule a

final examination in The Graduate School for candidates for an August 1979 degree

August 1—Wednesday—Last day to sit for a final examination for candidates for an August 1979 degree

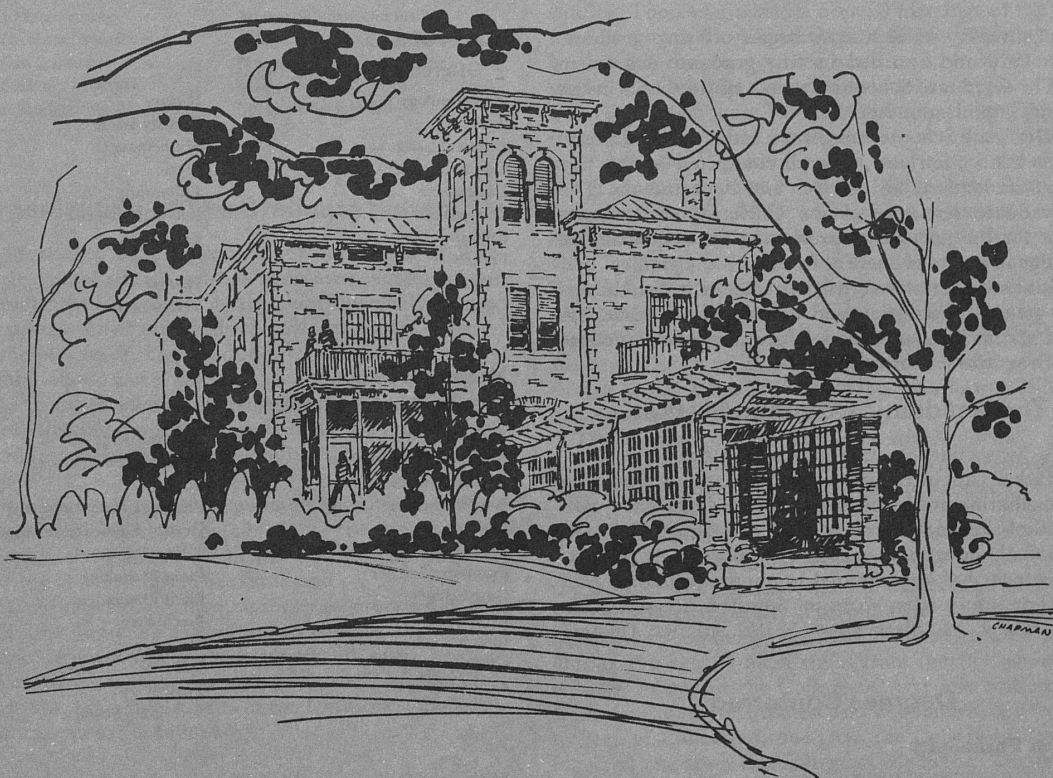
August 9—Thursday—Last day to submit thesis/dissertation to The Graduate School for candidates for an August 1979 degree

August 9—Thursday—Final Examinations

August 9—Thursday—End of Eight-Week Session

August 13—Monday—Final deadline for submission of grades to the Registrar's Office, 12 noon

Note: For Graduation and Diploma information see page 14



Otis A. Singletary, Ph.D.
President of the University

Wimberly C. Royster, Ph.D., Dean

Margaret E. W. Jones, Ph.D., Associate Dean

Dean Jaros, Ph.D., Associate Dean

The Graduate School

The University of Kentucky began offering graduate work in 1870 and awarded its first graduate degrees in 1876. The Graduate School became a distinct unit in the University organization in 1912.

The Graduate School is concerned with advanced study, graduate instruction and research conducted by the faculty and students of all colleges and departments. The total graduate resources of the University are merged under it for the purpose of promoting the acquisition of knowledge in an atmosphere of free and lively inquiry.

Graduate work is offered in most colleges in the University. A general description and tabulation of courses for each of the various programs is given in the Graduate School Programs section of this bulletin.

The Academic Common Market

Kentucky is a participating state in The Academic Common Market, an interstate agreement among Southern states for sharing academic programs. Students who qualify for admission may enroll in a specific program in another A.C.M. state on an in-state tuition basis. At present, the agreement has been limited to unusual graduate programs. For information write to: Southern Regional Education Board, 130 Sixth Street N.W., Atlanta, Georgia 30313.

Degrees Conferred

Doctor of Philosophy

Offered in following fields:

Agricultural Economics	History
Agricultural Engineering	Mathematics
Anatomy	Mechanical Engineering
Animal Sciences	Metallurgical Engineering and Materials Science
Anthropology	Microbiology
Biology	Musicology
Biochemistry	Pharmaceutical Sciences
Chemical Engineering	Pharmacology
Chemical Physics	Physics and Astronomy
Chemistry	Physiology and Biophysics
Civil Engineering	Plant Pathology
Crop Science	Plant Physiology
Diplomacy and International Commerce	Political Science
Economics	Psychology
Educational Psychology	Sociology
Electrical Engineering	Soil Science
Engineering Mechanics	Spanish
English	Statistics
Entomology	Toxicology
French	Veterinary Science
Geography	
Geology	
Germanic Languages	
Higher Education and Social and Philosophical Studies	

Master of Arts

Offered in following fields:

Anthropology	History
Art	Library Science
Classical Languages	Mathematics
Communications	Music
Diplomacy	Philosophy
Economics	Political Science
English	Psychology
French	Sociology
Geography	Spanish
German	Theatre Arts

Master of Science

Offered in following fields:

Anatomy	Pharmacology
Agricultural Economics	Pharmaceutical Science
Animal Sciences	Physics
Biochemistry	Physiology and Biophysics
Biology	Health, Physical Education, Recreation
Chemistry	Plant Pathology
Computer Science	Plant Physiology
Crop Science	Psychology
Economics	Soil Science
Entomology	Statistics
Geology	Toxicology
Mathematics	Veterinary Science
Microbiology	

Master of Science in Agriculture

Offered in following fields:

Agricultural Economics	Horticulture
Animal Sciences	Plant Pathology
Crop Science	Sociology
Entomology	Soil Science
Forestry	

Other Degrees

Doctor of Business Administration	Master of Science in Agricultural Engineering
Doctor of Education	Master of Science in Chemical Engineering
Doctor of Musical Arts in Music Teaching	Master of Science in Civil Engineering
Master of Arts in Education	Master of Science in Clinical Nutrition
Master of Science in Education	Master of Science in Dentistry with Specialty in Orthodontics
Master of Business Administration	Master of Science in Electrical Engineering
Master of Fine Arts	
Master of Music	
Master of Public Administration	
Master of Science in Accounting	Master of Science in Engineering Mechanics

Master of Science in Home
Economics
Master of Science in Library
Science
Master of Science in Me-
chanical Engineering
Master of Science in Medical
Radiation Dosimetry
Master of Science in Metal-
lurgical Engineering

Master of Science in
Mining Engineering
Master of Science in Nuclear
Engineering
Master of Science in Nursing
Master of Science in Radio-
logical Health—Specialty
Master in Civil Engineering
Master of Social Work
Specialist in Education

Organization of The Graduate School

The Graduate Faculty consists of the Dean of The Graduate School and all persons appointed thereto by the President of the University. As the chief University agency for the promotion of the ideals of graduate study, it determines the policies of The Graduate School and makes recommendations to the University Senate and to the President, or to other administrative officials as appropriate. All rules affecting graduate work and the inauguration of new graduate programs must be approved by the Graduate Faculty.

Any proposed change in the rules of The Graduate Faculty must be included in the agenda of the meeting and circulated to the Graduate Faculty at least 10 days prior to the meeting at which it is to be considered.

New Graduate Faculty members may be proposed to the Dean of The Graduate School at any time by the college deans and department chairmen concerned, or in the case of persons not attached to a college faculty, by the Vice President for Academic Affairs of the University. Eligibility qualifications are as follows:

1. The doctor's degree or its equivalent in scholarly reputation.
2. The rank of assistant professor (or equivalent), or higher.
3. Scholarly maturity and professional productivity as demonstrated by publications, editorial services, research surveys, creative work, or patents; and research in progress at the time of appointment.
4. Definite interest in graduate work and the willingness to participate in the graduate program.

Appointment to the Graduate Faculty is made by the President of the University on nomination by the Dean of The Graduate School after the Dean and the Graduate Council have studied the credentials submitted in support of the proposed members.

Associate members of the Graduate Faculty are appointed by the Dean of The Graduate School.

Administrative officers assigning teaching and other duties to members of the Graduate Faculty who are taking an active part in the graduate program (i.e., are heavily engaged in directing theses, carrying on productive research, etc.) should make appropriate reduction in the duties required of such teachers.

The Role of the Dean

The Dean of The Graduate School is charged with the administration of the policies adopted by the Graduate Faculty and the University Senate relating to graduate studies. The Dean presides over all meetings of the Graduate Faculty and calls meetings of this faculty whenever it is advisable or whenever requested to do so by one-fourth of the membership. Recommendations are made by the Dean to the Graduate Faculty respecting the requirements for advanced degrees, the regulations necessary to insure a high standard of graduate work, and all other aspects of the graduate program. From the Office of the Dean, committees are appointed for each graduate student, arrangements are made for final examinations, students are advised with regard to their studies and the requirements of The Graduate School, and the graduate programs are administered in the interests of efficient instruction and the highest attainment possible on the part of each graduate student. The Dean is responsible for determining and certifying to the Registrar candidates who have fulfilled requirements for advanced degrees.

The President, Vice President for Academic Affairs, and the Dean of the Graduate School are members ex officio of all committees of the Graduate Faculty.

The Graduate Council

The Graduate Council is composed of 13 members and the Dean of The Graduate School, who is chairman. There are eight elected faculty representatives and three faculty members appointed by the Dean of The Graduate School. One of the elected members is from the College of Agriculture, two from the College of Arts and Sciences, one from the College of Business and Economics, two from the College of Education, one from the College of Engineering, and one from the College of Medicine. The member or members from each of these colleges are elected by the Graduate Faculty members in that college. Two graduate student members are selected by the Council from a panel of four submitted by the Graduate and Professional Student Association. The term of office of the elected and appointed members is three years, and that of the graduate students is one year. Members may not succeed themselves until three years have elapsed since the completion of their last term.

The Graduate Council approves or disapproves proposals concerning courses offered for graduate credit, and advises and lends assistance to the Dean in executing the policies and regulations determined by the Graduate Faculty. Specifically, the Council:

1. Studies requests of departments relating to proposed graduate programs.
2. Reviews existing programs and courses.
3. In cooperation with the Dean, initiates recommendations to the Graduate Faculty. (This procedure is not intended to prevent a faculty member from bringing any recommendation or request directly before the Graduate Faculty.)

The Graduate Council has such authority as is herein granted, or such as the Dean or the Graduate Faculty may

delegate to it. A majority of the Graduate Council constitutes a quorum for the transaction of business.

Directors of Graduate Studies

A Director of Graduate Studies serves as program adviser to each student until the student has a thesis director. The Director of Graduate Studies then recommends that the thesis director be appointed the student's adviser or committee chairman. In areas where theses are not required, the Director of Graduate Studies is the adviser for all students not writing theses. All student schedules must be endorsed by the student's adviser.

If it is desirable, a Director of Graduate Studies may recommend that additional advisers in the area be appointed. A Director of Graduate Studies who is to be absent from the University for as long as a semester must call this fact to the attention of the Dean so that a substitute may be appointed.

The Dean of The Graduate School, with the advice of the college dean(s) and the approval of the President, may recommend to the Graduate Faculty the areas of graduate study and research into which the University may be divided. (The logical unit for an area is a department. By common consent, however, certain departments may be grouped into an area; and in exceptional cases a department may be divided into two or more areas.) The Directors of Graduate Studies for the various areas are appointed by the Dean of The Graduate School.

Establishment and Modification of Graduate Programs

An area which wishes to establish a new graduate program or modify an existing one must submit its program to the Graduate Council, which will make recommendation concerning it to the Graduate Faculty.

Student Responsibility

It is the student's responsibility to be informed concerning all regulations and procedures required by the course of study being pursued. *In no case will a regulation be waived or an exception granted because a student pleads ignorance* of the regulation or asserts that information was not presented by advisers or other authorities. Therefore, the student should become familiar with The Graduate School Bulletin, including (1) the section presenting the requirements for degrees and (2) the departmental offerings and requirements.

The Director of Graduate Studies in the students' major program should be consulted concerning course requirements, any deficiencies, the planning of a program, and special regulations. Departments may have degree requirements that are not listed in the Bulletin.

It is to be noted that the Graduate Dean interprets the Graduate Bulletin. Only the Graduate Council may waive requirements stated in this Bulletin.

Admission

An applicant for admission to the University shall not be discriminated against because of race, color, religion, sex,

marital status, or national origin.

Students seeking admission to the University of Kentucky Graduate School must hold a baccalaureate degree from a fully accredited institution of higher learning. An overall undergraduate grade-point average of 2.5 and 3.0 on all graduate work is required by The Graduate School. Individual departments may require higher grade-point averages.

All applicants for admission to degree programs in The Graduate School must submit scores on the verbal and quantitative portions of the Graduate Record Examination. Requests for waiver of the GRE requirement must be initiated through, and submitted in writing by, the Director of Graduate Studies in the program concerned. If the GRE is waived for admission, it *must* be taken during the first semester of enrollment. The College of Business and Economics may substitute the Graduate Management Admission Test for M.B.A., D.B.A. and Accounting students. The Medical College Admission Test or the Dental College Admission Test may be substituted with the approval of the program concerned.

Application forms can be obtained by writing:

Graduate School Admissions
Room 304, Patterson Office Tower
University of Kentucky, Lexington, Kentucky
40506

Applications and all supporting documents must be submitted by the stated deadline (See Calendar).

It should be clearly understood that graduate students may not be able to begin immediately a full graduate program leading to the degree they desire; it may be necessary for them to satisfy prerequisites which they omitted in their undergraduate curriculum. Deficiencies are determined by the program in which the major work is to be done. Ordinarily, graduate students may begin a full program in any field in which they have a balanced undergraduate major or its equivalent.

Admission to The Graduate School entitles students to take such courses as they desire, provided they have the necessary prerequisites. *However, students are not candidates for graduate degrees until they have been Admitted to Candidacy.*

Attendance in The Graduate School at the University of Kentucky is not a right. It is a privilege which may be withdrawn by the University or any area of graduate study if it is deemed necessary by the Dean of The Graduate School in order to safeguard the University's standards.

Health Service

For information, contact University Health Service, Student Health—Family Practice Building (Medical Center, Annex 4) across Rose Street from the Medical Center.

Housing

Single Graduate Student Residence Halls

The University offers residence units with apartment facilities assigned two to a unit for the academic year. With permission from the Housing Office, students may remain for the summer without additional charge. Students requesting single occupancy will be charged double rates. Students living in these facilities may prepare their own meals or may have University board contracts. For further information write to University Housing, 539 Patterson Office Tower.

Married Graduate Student Housing

Apartments are available for married students. For information write to Married Student Housing, Cooperstown, Building C.

Off-Campus Housing

In an effort to assist students who desire to locate non-University housing, the Dean of Students Office maintains an unsolicited listing of rooms, apartments, and houses submitted by any interested lessor in the Lexington community. The University neither inspects nor approves any of this rental property. Therefore, the off-campus housing list is in no way "authorized" by the University, but merely is maintained for the students benefit.

The only University requirement for listing is that the prospective landlord sign a statement of nondiscrimination on the basis of race, religion, creed, or national origin as provided by law. This list can be obtained from Room 575 Patterson Office Tower. Also, students who have housing and wish to locate a roommate may contact this office.

Food Services

The campus has four cafeterias with a total seating capacity of 2,950. Students may eat at Blazer Hall, Donovan Hall, the Complex Commons Cafeteria, or the Student Center. The K-Lair Grille, Keeneland Grille, and the Grille in the Complex Commons are short-order facilities open during peak rush hours and in the evenings. All of these facilities are owned and operated by the University.

Foreign Applicants

All non-U.S. citizens, except permanent residents of the U.S., should request the Application Form for Foreign Students. Applicants must have excellent grades and rank in the top quarter of their classes. To be considered for entry as a graduate student an applicant must have had four years of university level work. **Indian students:** (a first class record is normally expected although high second class holders in non-science areas may be considered if they can offer further evidence of having been in at least the top 10 percent of their graduating class).

When credentials are submitted in support of any application, they should be either the original documents or certified copies (i.e., copies certified as "true copies" by a

notary public or a United States Embassy official). An official translation must be attached to these records if they are in a language other than English. Credentials should include a record of all degrees earned, detailing all subjects taken and grades obtained. Grades **must** be listed in the indigenous system. Remember that uncertified photostat copies are not adequate. Applications for admission are not considered complete without official scores for the verbal and quantitative portions of the Graduate Record Examination or the Graduate Management Admissions Test in Business. For information concerning either of the tests write to: Educational Testing Service, Box 955, Princeton, N.J. 08540, or Educational Testing Service, Box 1502, Los Angeles, Cal. 94701.

English Proficiency Requirement: The University of Kentucky requires a score of 550 on the Test of English as a Foreign Language (TOEFL) of all applicants whose native tongue is not English. The test is given four times each year. To register you must obtain the TOEFL Bulletin, which includes a registration form. Bulletins are available in many locations outside the U.S., usually at American embassies and consulates, offices of the United States Information Service (USIS), United States educational commissions and foundations, bi-national centers, and many private organizations such as the Institute of International Educational (IIE), African American Institute (AAI), America-Mideast Educational and Training Services, Inc. (AMIDEAST), and American Kor-Asian Foundation.

Candidates who plan to take TOEFL in any countries identified below must obtain a copy of the Bulletin from, and must register through, the agency that is responsible for that country or region.

1. All countries in Europe (including Cyprus, Great Britain, Ireland, and Iceland):

CITO
Postbus 1034
Arnhem 6000, Netherlands

2. All countries in the Middle East (except Israel) and North Africa:

American Friends of the Middle East
Abou Shakra Building
Post Office Box 1249
Amman, Jordan
or
Any office of AMIDEAST in the Middle East or North Africa

3. Hong Kong:

Education Department, External Examinations Section
Canton Road Government Offices
393, Canton Road, 11th Floor,
Kowloon, Hong Kong
or

Institute of International Education
408 J. Hotung House,
Fourth Floor
5/15 Hankow Road,
Kowloon, Hong Kong

4. India:

Bureau of Educational Research
Ewing Christian College
Allahabad, U.P., 211003, India

5. Republic of China:

Language Center,
2-1 Hsu-chow Road
Taipei, Taiwan (100),
Republic of China

6. Thailand

Institute of International Education
National Education Commission
Building
Sukhotlai Road, Dusit
Bangkok, Thailand

Students who cannot obtain a TOEFL Bulletin and registration form locally should write, well in advance, to: Test of English as a Foreign Language, Box 899, Princeton, New Jersey 08540.

Financial Resources Requirement. Graduate applicants must certify that they have at least \$4500 available per year. It is estimated that this amount will cover the cost of tuition fees (\$1600), books and supplies (\$200), room and meals (\$2000), health insurance (explained below) and incidentals, for a single person, from the end of August to early May. Living and incidental expenses for the summer months will total approximately \$700.

At the beginning of each registration period, the student must have \$1500 on hand to pay for tuition fees, room and board and health insurance. These items are payable in September and January and cannot be paid in monthly installments.

University Housing. For information on University of Kentucky housing, write well in advance to:

Cooperstown Office
University of Kentucky
Lexington, Kentucky 40508

Health Services. The University of Kentucky has an excellent health care program for its students. The Student Health Service clinic on campus is staffed with physicians, surgeons, psychiatrists and other health professionals who are specialists in the problems of young adults. Students who must be hospitalized are admitted to University Hospital.

Health Fee. There are no "free" services but students pay only a nominal fee each semester (it was \$15 in 1976-77) which covers most of the services provided by the student clinic: doctor visits, laboratory services, some drugs, allergy shots, immunizations, etc.

Health Insurance. In addition to paying the health fee, students must have health insurance to cover the cost of hospitalization, accident care and surgery. These services are not covered by the health fee and since they are very costly in the United States students must protect themselves (and their families if they are married). Foreign students must have insurance that is payable in the United States.

As a service to students who need insurance, the University makes available a Student Group Insurance Plan. The cost is about \$70 per year for a single student and about \$120 per year for a student and spouse (without maternity benefits). If there are children in the family, or if maternity benefits are desired, the cost is about \$220 per year to cover the entire family.

The premium for this insurance is paid in two installments at the beginning of each semester. The coverage of the policy begins on August 26 for those enrolling in the fall and it provides benefits anywhere in the world during the period for which the premium is paid. Two premium payments provide protection for 12 months.

Additional information about the health fee and health insurance are available at the University's Foreign Student Office and at the Health Service. It should be noted that dental care, examinations for eye glasses and some drugs are not provided by either plan and students must pay for these services themselves.

Health Report Form. The Certificate of Eligibility (Form 1-20) cannot be issued for admission until the Graduate Admissions Office has received a completed health form indicating that the student has had a recent physical examination. Health Forms are mailed from the Graduate Admissions Office prior to final admission.

Application Deadline for Foreign Students. Applications for admission and complete credentials should reach the Admissions Office at least six months before the opening of the term the student wishes to enter, that is, February 1 for the fall semester which begins in late August, June 15 for the spring semester which begins in mid-January, and November 1 for all summer sessions.

Summer Program in English for Foreign Students. The Program in English for Foreign Students is available only to foreign students who have been admitted to the Graduate School contingent upon successful completion of the program. It is offered by the English Department during the Eight-Week Summer term. No credit hours may be earned for the course. The registration fee of \$275 will cover cost of instruction and certain cultural activities connected with the course; it will not cover room and board (estimated at \$400-500 for the eight-week period). For fur-

ther information or applications, contact the Chairman of the Department of English, 12th Floor, Patterson Office Tower.

Readmission

Former University of Kentucky students in good standing are eligible for readmission. They must file an application for readmission by the stated deadlines (See Calendar). An exception to this rule is made on behalf of students who attend only University Summer Sessions. These students do not have to apply for readmission to a Summer Session if they were enrolled for the preceding Summer Session.

Registration forms, which must be prepared in advance for any registration period, are not made for a student after one semester's absence from the University. It is only by the filing of an application for readmission in advance that the Registrar's Office can prepare the necessary registration forms for a student intending to re-enter the University.

Unclassified Graduate Students

Students who hold a baccalaureate degree and who wish to pursue graduate study without a degree objective and students who do not fulfill the entrance requirements of The Graduate School may apply for admission as an unclassified graduate student.

Admission to this status may be granted to an applicant who (1) demonstrates promise but has not qualified for admission to a degree program, or (2) intends not to complete a degree program. Students may take courses for graduate credit but may not apply more than 12 hours of credit with a grade of A or B earned in the unclassified status to any degree program leading to an advanced degree at this institution. All transfers of credit hours to a graduate program must be approved by that program's Director of Graduate Studies and the Graduate Dean.

An application for admission to The Graduate School as an unclassified graduate student should be on file in the Admissions Office at 30 days in advance of the registration date for the term in which the student plans to enroll.

Unclassified students who wish to apply for a graduate program must have a 3.0 grade-point average on all work attempted as an unclassified student. Application to a program should be made to the Graduate Admissions office by the Calendar deadlines.

Unclassified graduate students have one month after the start of a semester to be admitted to a degree program in The Graduate School. After this time a student must wait until the next semester.

Graduating Seniors as Part-Time Graduate Students

A senior in the University of Kentucky lacking no more than six credit hours for graduation and having an undergraduate average of at least 2.5 on all work attempted may register in The Graduate School with the consent of the

undergraduate college dean and the Dean of The Graduate School. Approval of the appropriate Director of Graduate Studies is required if the student is to be an applicant for a degree. *The total load of such a student may not exceed 12 credit hours.* Graduate credit will be allowed for each credit hour of graduate work beyond the six or fewer credit hours needed to complete undergraduate requirements. Requirements for the undergraduate degree must be completed during the semester in which the student is allowed to register for part-time graduate work. A student applying for admission in The Graduate School under these conditions must fill out in duplicate a petition form listing the course or courses to be taken to complete the undergraduate requirements. Petition forms are available in the undergraduate departmental offices. The petition must be approved by both Deans concerned.

Scholastic Probation

When students have completed 12 or more semester hours of graduate course work with an average of less than 3.0, they will be placed on scholastic probation and are subject to dismissal from their programs.

Students will have one semester to remove the scholastic probation by attaining a 3.0 average. If probation is not removed, students will be dismissed from The Graduate School.

Students who have been dismissed from The Graduate School for these reasons may reapply for admission to The Graduate School after two semesters or one semester and the eight-week summer term.

Exceptions to this policy can be made only by the Graduate Dean.

Advanced Degrees for Faculty Members

Members of the faculty, excepting those in the Community College System, having a rank higher than that of Instructor may not be considered as candidates for degrees in the discipline in which they are employed or as candidates for degrees above the Master's degree in any discipline.

University of Kentucky Libraries

The University of Kentucky Library, one of the nation's top 50 research libraries, contains approximately 1,700,000 volumes, 1,600,000 microform units, and 10,000 linear feet of manuscripts. The collection also includes 125,000 maps, 7500 music records, and 25,000 pictures, tapes and miscellaneous items. The Library currently subscribes to 25,000 periodicals including 320 foreign, domestic, and Kentucky newspapers.

Strong emphasis is placed on the development of a quality collection responsive to the teaching and research needs of the University. The obligation to secure resources for the future needs of the academic community is also recognized. The collection is particularly strong in bibliography, history, mathematics, geology, agriculture, law, lit-

erature, and languages. Branch libraries housing special collections include agriculture, biological science, chemistry and physics, law, architecture, geology, engineering, mathematics, art, business, education, medicine, music, and pharmacy.

The Library is responsible for locating and obtaining for its scholars needed research materials not available in its collection. These materials are borrowed from other research libraries through interlibrary loan. Other services include reference, government documents, on-line computerized literature searching, individualized instruction in library use, academic information and referral, and replication of materials in both microform and hard copy.

Information booklets and guides to the Library and its resources are available at the King Library Circulation Desk and in the Reference Department. Of particular interest is the *Graduate Student Handbook*, also available in the Reference Department.

During fall and spring semester King Library is open from 8 a.m. until 12 midnight, Monday through Thursday; 8 a.m. until 10 p.m. on Friday; 8 a.m. until 6 p.m. on Saturday, and 12 noon until midnight on Sunday. Certain branches within the Library System have shorter schedules. Hours of service may be obtained by contacting any of the following branches:

Branch and Associate Libraries

Agriculture	N24 Agricultural Science Center North	258-2758
Architecture	200 Pence Hall	258-5700
Art	King Library North (lower level)	257-3097
Biological Sciences	313 Thomas Hunt Morgan Building	258-5889
Business and Economics	401 Commerce Building	258-4644
Chemistry-Physics	150 Chemistry-Physics Building	258-5954
Education	205 Dickey Hall	258-4939
Engineering	355 Anderson Hall	258-2965
Geology	100 Bowman Hall	258-5730
Law	128 Law Building	258-8687
Mathematics	9 Patterson Office Tower	258-8253
Medical	135 Medical Center	233-5300
Music	116 Fine Arts Building	258-2800
Pharmacy	203 Pharmacy Building	257-1798

INFORMATION AND REQUIREMENTS FOR ALL ADVANCED DEGREES

Registration and Classification

All students expecting graduate credit must be enrolled in The Graduate School. Graduate students will conform to the general registration schedule of the University and may not enter later than the last allowable date set by the Registrar.

Before registering, graduate students must obtain their adviser's approval of their proposed program.

Graduate Record Examination

All applicants for admission to degree programs in The Graduate School must submit scores on the verbal and

quantitative portions of the Graduate Record Examination. This rule may be waived in individual cases upon recommendation of the Director of Graduate Studies in the individual department or program. But in cases where waivers are granted, the GRE scores must be submitted before the end of the first semester of graduate study. The advanced portion of the GRE may be required by individual departments or programs if they so desire. (This excludes students who do not plan to work toward a graduate degree, i.e., visiting students, Rank 1, Fifth-year, and Un-classified students.)

The College of Business and Economics may substitute the Graduate Management Admissions Test (GMAT) for the Graduate Record Examination for M.B.A., D.B.A. and Accounting students.

The Medical College Admission Test or the Dental Admission Test may be substituted in appropriate areas for the verbal and quantitative portions of the GRE with the approval of the Dean of The Graduate School.

Students who have earned an academic doctorate are exempt from the requirement of the MCAT or the GRE.

Admission to Candidacy

Students expecting to earn graduate degrees at the University must be admitted to candidacy for the degree. Even though all of the necessary course work is complete, students must be admitted to candidacy before degrees may be awarded.

The following procedure is used to process applications for Admission to Candidacy:

Master's Degree: If the GRE or GMAT is waived for admission, the applicant *must* take the examination during the first semester of graduate study. The application for Admission to Candidacy must be filed with The Graduate School at the end of the first semester (full-time) of graduate study or when the student has completed 12 hours of graduate work. Applications are available in The Graduate School Office. To qualify for Admission to Candidacy, students must complete at least nine hours of graduate work with a minimum 3.0 grade-point average, submit GRE or GMAT scores, be recommended by the Director of Graduate Studies in the program, have no incomplete grades on their records and have the approval of the Dean of The Graduate School. Failure to meet the conditions outlined above, will result in Admission to Candidacy being deferred until completion of 18 hours with a minimum 3.0 grade-point average.

Doctoral Degrees: Students are Admitted to Candidacy after they have successfully completed the Qualifying Examinations.

Graduate Courses—Grade Average

All courses numbered 500 through 799 may be counted for credit toward a graduate degree provided they are approved as an appropriate part of the student's graduate program by the students' graduate adviser or committee. **Courses numbered 800 or 900 are normally not accepted for credit toward a graduate degree.** Exceptions can be

made if permission is granted by the Graduate Council to a program to offer specific professional courses as part of its academic program. Prior approval to take a course must be obtained from the Director of Graduate Studies, the Dean of The Graduate School and the Dean of the Professional College. Without such approval professional courses may not be counted toward satisfying degree requirements. Courses numbered 400 to 499 carry graduate credit for nonmajors only.

Courses numbered at the 600 or 700 level shall be taught only by members of the Graduate Faculty or by such other instructors as are approved by the Graduate Dean.

Add/Drop—Withdrawal

The Graduate School follows the rules of the University Senate as administered by the Registrar's Office.

Grades

The official grades of graduate students are recorded in the office of the Registrar.

The grading in graduate courses is done according to the following scale:

A—high achievement	4 grade points per credit
B—satisfactory achievement	3 grade points per credit
C—minimum passing grade	2 grade points per credit
E—failure	0 grade points per credit
I—incomplete	see explanation following
S—satisfactory	see explanation following

A grade of I (incomplete) may be assigned to a graduate student if a part of the work of a course remains undone and there is a reasonable possibility that a passing grade will result from completion of the work. **All incompletes (I grades) must be removed from a students' record unless approved by the Dean of the Graduate School.**

A grade of S (satisfactory work in progress) may be recorded for students in graduate courses which carry no credit and in graduate seminars, independent work courses, and research courses which extend beyond the normal limits of a semester or summer term. The grade may not be given to a student in a course carrying credit if the student has done unsatisfactory work or failed to do a reasonable amount of work. The project must be substantially continuous in its progress. When the work has been completed, a final grade will be substituted for the S.

An over-all average of B on all work carrying graduate credit, must be attained before an advanced degree may be awarded. All graduate level courses (500-799) completed after admission to The Graduate School are computed in the grade-point average. Thus, all work attempted, including repeated courses, are computed in the graduate grade-point average. D grades are not given to graduate students. An "incomplete" (I) (unless the Dean of The Graduate School grants an extension of time) must be removed within one calendar year after the close of the term in which the I is assigned if the student is to receive credit.

Once a grade (other than an I or S) has been reported to the Registrar's Office, it may not be changed unless an error was made at the time the grade was given and recorded, and then only upon the written unanimous approval of the instructor, the Registrar, and the Dean of The Graduate School.

Credit Equivalence

Certain research courses carry no credit hours or grades but do contribute to the residence requirements of graduate degrees. For these courses the credit equivalent is stated in the course descriptions.

Academic Load

The total semester or term load of a student is the sum of all credits and credit equivalents (e.g., graduate language courses, undergraduate courses, courses audited, etc.) being carried. The normal load of a graduate student during any semester is 12 credit hours or equivalent. Under no circumstances may it exceed 15 credit hours or equivalent. During the summer term, the maximum load for the eight-week term is nine credit hours, and the four-week intersession is four credit hours.

The maximum load for any combination of the four and eight-week terms is 12 credit hours. Students satisfactorily completing nine course credits, or equivalent, of graduate level work during a semester, are classified as full-time students. Students satisfactorily completing six course credits, or equivalent, during a summer term are classified as full time. Those completing less than these amounts are classified as part time except that a teaching or research assistant may be classified as full time (for residence credit purposes) by taking six semester hours if the Director of Graduate Studies recommends and the Dean of The Graduate School approves. For the student who is a full-time teaching assistant or whose service to the University requires approximately 20 hours per week, the load shall not exceed 10 hours. This maximum may be increased to 12 hours for students with lighter service loads upon recommendation of the Director of Graduate Studies and approval of the Dean of The Graduate School.

Full-time students who fall below the minimum full-time equivalent as the result of failing or dropping one or more courses are reclassified as part-time students for that semester or term.

Master's candidates working on their theses may register for up to the equivalent of six course credits by signing for course 768 in the appropriate department and indicating the desired credit equivalent in parentheses on the registration card.

Persons holding full-time working or professional assignments, whether employed by the University or not, may not take more than six credit hours (excluding 769 courses) for graduate credit toward a degree in any single semester or term. Students may petition for a waiver of this rule when the following conditions are met: (1) has satisfactorily completed six credit hours of graduate work; (2) has at

tained higher than national average scores on the aptitude and advanced tests of the Graduate Record Examination; and (3) has appropriate employment facilities and conditions.

Doctoral Residence

To receive a semester of full-time residence credit doctoral students must satisfactorily complete nine credit hours of graduate level work. To receive a semester of full-time residence credit during the summer, doctoral students must satisfactorily complete three credit hours during the four-week intersession and nine credit hours during the eight-week term. Doctoral students attending the summer term PRIOR to the Qualifying Examination must complete a minimum of nine credit hours in order to count the summer term as a full-time term.

Students Changing Programs

Students who plan to change to another program, must have the consent of the Director of Graduate Studies in the new program. A letter of acceptance must be sent to The Graduate School. Also students must request by letter that the change be made by The Graduate School.

Short Courses

Short courses are defined as courses of less than a term in length. A short course may not carry credits greater than the number of weeks during which it is offered. Two short courses of four weeks or less or two full-term courses and a short course may not be taken simultaneously. A total graduate program may not be made up of short courses.

Visiting Students

University of Kentucky graduate students who attend another Graduate School as a Visiting Student must have the permission of their University of Kentucky advisers and the Dean of The Graduate School at the University of Kentucky before the courses are taken in order to transfer credits earned.

Visiting Student status may be granted only to students in good standing who are in programs.

Students who are enrolled in a Graduate program at another institution and plan to attend the University of Kentucky as a Visiting Student, need not submit transcripts. Students must, however, request a Visiting Student form from the Graduate Admissions Office when filing an application. Visiting Student admission is for one semester only and credit earned in that status is not applicable to a University of Kentucky degree.

Time Limit for Degrees

No course or equivalent credit may be given for graduate study completed more than eight years prior to the end of the semester at which a student expects to receive a degree unless such credit or equivalent is specifically validated by The Graduate Council on written recommenda-

tion of the appropriate Director of Graduate Studies. No course or equivalent credit may be validated in this manner if completed more than 12 years prior to the end of the semester in which the student expects to receive a degree.

Graduation

Advanced degrees may be conferred at the close of any semester or summer session, but commencement exercises are held only at the close of the academic year. Students who are eligible to receive degrees at the end of the first semester or the summer session may participate in the next commencement exercises.

Appropriate academic costume must be worn. The thesis and dissertation fees cover the cost of binding of the thesis or dissertation, microfilming, and copyright (See section on copyright).

To be eligible for a degree, students must file an application at the Graduate Office within 30 days after the beginning of the semester or 15 days in the Summer Session in which they expect to complete their work.

Accounts Payable to the University

All outstanding accounts due to the University must be cleared before a degree is awarded. Candidates for degrees whose accounts are cleared close to the final deadline date for graduation clearance, should take their receipt of payment to the Registrar's office.

Diplomas

Diplomas for graduate students are ordered after certification of the degree has been completed. If a letter of certification is needed, please write The Graduate School and one will be provided.

Fees

Registration fees per semester are \$310 for residents of Kentucky, \$800 for non-residents. Part-time graduate students who are legal residents of the state pay \$35 per semester hour; non-residents pay \$89 per semester hour. Resident students in the summer will pay \$35 per semester hour; non-residents \$89 per semester hour. The Registrar determines the status of one's residence for purposes of assessing fees.

Graduate fellows, graduate assistants, and instructors may have all or part of the out-of-state tuition remitted, depending on the individual stipend. Students should check with their appropriate Director of Graduate Studies for specific amounts of tuition waived.

Doctoral Candidates registering for 769-0 pay no fees.

GENERAL REQUIREMENTS FOR ALL MASTERS' DEGREES

(See also General Requirements for All Advanced Degrees)

On-Campus Residence

There is no Graduate School-wide sustained residence requirement for master's degrees at the University of Ken-

tucky. However, students are advised to consult the special statement of requirements for the programs in which they are interested and consider carefully the statement about the spirit of resident graduate work in the section on residence. Students who contemplate continuing in a doctoral program should take into account at the outset the residence requirements for the doctoral degree.

Transfer of Credits

With the approval of their graduate adviser, Director of Graduate Studies, and the Dean of The Graduate School, students may transfer up to nine credit hours of graduate level work from an accredited graduate school to apply toward the minimum requirements for the master's degree. These credit hours must have been earned post-baccalaureate. Course work used in obtaining a master's degree may not be transferred to satisfy requirements for another degree.

Correspondence Courses

No graduate credit is given for courses taken by correspondence.

Courses and Curricula

Graduate students are eligible to take regular courses which meet as organized classes and independent-study or research courses in which each student carries on investigations independent of class meetings. *Independent study or research courses must not duplicate thesis work*; thesis work must be done in addition to the minimum course requirements. *At least two-thirds of the minimum requirements for the master's degree must be in regular courses, and at least half of the minimum requirements must be in courses numbered on the 600 or 700 level.* Exceptions to this rule may be made only with the approval of the Graduate Council.

Students may work toward only one master's degree at a time. At least one year of residence must be established while earning a second master's degree.

Final Examination

A final examination (oral and/or written) is given all candidates for master's degrees not later than eight days before the last day of classes of the semester in which the degree is to be awarded. The examination is scheduled by the Graduate Dean and the report is returned to the Dean upon completion of the examination, which in no case may be later than two weeks after the start of the examination. The examining committee consists of at least three qualified members recommended by the Director of Graduate Studies and appointed by the Dean of The Graduate School. The recommendation for a final examination must be filed with The Graduate School at least two weeks prior to the date of the examination. If a thesis is written, see the Thesis Section under Requirements for the Degree of Master of Arts and Master of Science for procedures.

If the candidate fails the final examination, the commit-

tee may recommend to the Graduate Council the conditions under which a second examination may be administered. Insofar as it is practicable the same examining committee gives this examination. In all decision the majority opinion of the committee prevails. If the committee is evenly divided, the candidate fails. A third examination is not allowed.

DEGREES OF MASTER OF ARTS AND MASTER OF SCIENCE

The Graduate School authorizes all graduate programs to permit students to satisfy the requirements for the M.A. and the M.S. degrees by either of two plans.

PLAN A

In addition to meeting all general requirements for masters' degrees (see section on General Requirements for All Advanced Degrees) the candidate must complete at least 24 semester credit hours of graduate course work with a standing of 3.0 (B) or higher, satisfy the language requirements, and write a thesis. A candidate must have a major area (defined usually as an academic department) and must (with the exceptions noted below) take at least two-thirds of the course work in this area; the other one-third may be taken in this area or in graduate areas which have a relationship to it. In Education, Agriculture, and Communications only one-half of the work must be in the major area. When the setting up of major topics seems to require it, the Graduate Council may, on recommendation of the appropriate Director of Graduate Studies, authorize courses taught outside the major to count on the major.

Thesis

Theses must be developed under the direction of a member or associate member of the Graduate Faculty. Collaborative effort by two or more graduate students is not forbidden. However, there must be enough independent effort to enable each student to make a separate contribution and to prepare an individual thesis.

Theses must be in conformity with the instructions prepared by The Graduate School. For specific instructions regarding the format of theses, the student should obtain a copy of the leaflet, *Instructions for the Preparation of Theses and Dissertations*, from The Graduate School office.

Before the final examination the thesis director and the appropriate Director of Graduate Studies must indicate to The Graduate School that the student's thesis satisfies all requirements of The Graduate School and is complete in content and format with the exception of pagination, and that the student is ready to be examined. If the final examination committee indicates that the student has passed the final examination, the modifications in the thesis which the committee specifies must be made.

The final copies are submitted to The Graduate School after the Director of Graduate Studies and the Thesis Director have signed that they are complete.

Theses must be presented and accepted by the Graduate School by the last day of the semester if a student plans to graduate that semester.

Each student will pay a fee for the binding of the thesis. Payment will be made at the Billings and Collection office.

Theses submitted by candidates become the physical property of the University of Kentucky and authors agree that the University may decide the conditions under which they may be used or published. The University protects the authors' rights by placing certain restrictions upon borrowers' use of theses as long as they are unpublished. A copy of the following regulations (to be prepared by the student) is placed before the title page of every thesis:

Unpublished theses submitted for the masters' and doctors' degrees and deposited in the University of Kentucky Library are as a rule open for inspection, but are to be used only with due regard to the rights of the authors. Bibliographical references may be noted, but quotations or summaries of parts may be published only with the permission of the author, and with the usual scholarly acknowledgements.

Extensive copying or publication of the thesis in whole or in part requires also the consent of the Dean of The Graduate School of the University of Kentucky.

A library which borrows this thesis for use by its patrons is expected to secure the signature of each user.

PLAN B

Plan B has the same minimum requirements as Plan A except that six or more credit hours of course work may be submitted for a thesis. A student may follow this plan only with approval of the program concerned.

Students should consult their adviser for any additional requirements that may have been set up for Plan B by their area of study.

Foreign Language Requirement

Many programs require a reading knowledge of a modern foreign language for the Master's degree. French, German, or Russian are the accepted languages. However, another language pertinent to the students programs may be substituted with the approval of the adviser and the Dean of The Graduate School. The language requirement may be satisfied by:

1. Completing one of the accelerated graduate level language courses with a B or better grade.
2. Completing the Educational Testing Service examination with a minimum score of 550.
3. Completing four semesters (or equivalent) of a modern foreign language with a grade-point average of B or better as an undergraduate at the University of Kentucky.
4. Completing with a grade of B or better Special Examinations given for the graduate reading courses. Forms may be obtained from the Registrar's Office, Administration Annex. Other types of special examinations are scheduled in The Graduate School Records Office.
5. Transferring a language taken to satisfy the requirements for a Master's degree at another university.

Candidates for degrees in the language which is their native tongue must complete a full major (one-third of their work) in areas in which English is the language used.

DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is conferred upon a candidate who normally after completing not fewer than three years of graduate work devoted to study of a special field of knowledge, presents a satisfactory dissertation, passes a comprehensive examination on the dissertation subject and chosen field, and shows sufficient promise of scholarly attainment.

The doctor's degree is intended to represent not a specified amount of work covering a specified time, but the attainment, through long study, of independent and comprehensive scholarship in a special field. Such scholarship should be manifested by both the student's grasp of subject matter and capacity to do research.

Student's Adviser and Special Committee

The Director of Graduate Studies in the student's major area serves initially as the student's adviser. Schedule cards are signed by the Director of Graduate Studies before they are presented to the Dean of The Graduate School. When the Dissertation Director has been chosen, the student's Special Committee is set up by the Dean after conferring with the student, the Director of Graduate Studies, and the dissertation director.

The special committee consists of the Dissertation Director as Chairman, two or three other members from the major area, and at least one representative from each minor area if there is a minor area—in all, no fewer than five members. This committee advises the applicant and sets the requirements which the student must meet before admission to the qualifying examination. This special committee keeps minutes of all meetings and sends abbreviated copies to the Dean to be made a part of the student's record. Ordinarily this committee determines when the Qualifying Examination is to be administered, and the Chairman schedules the examination in writing, sending a copy of the announcement to the Dean. The committee is the final judge on a majority basis of the questions to be asked on the qualifying examination and of whether the student passes.

A program which elects to do so may give a uniform departmental qualifying examination to its candidates instead of delegating full responsibility to the Special Committee.

Major and Minor Subjects

Every applicant for the Ph.D. degree must select a major area of study and some programs require one or two minor areas. The major area is one in which the student intends to concentrate his efforts.

If a minor area is required, this area must be approved by the Graduate Dean and the subjects to be included in the minor(s) must be approved by the representatives of the minor(s) on the Special Committee. Normally, when

an outside minor is required, at least one-sixth of the student's program should be devoted to study in this area.

Residence Requirements

The purpose of a residence requirement is to insure that a student's graduate education includes the important component of full contact with the academic community. The requirement is intended to assure that doctoral students are fully involved with colleagues, libraries, laboratories, ongoing advanced inquiry and the intellectual ferment which is generally as important as actual classwork.

While the residence requirement is, by necessity, given in terms of full or part-time enrollment, it should be recognized that the intent of the requirement is to insure that the student is fully involved in University life.

While it is expected that a well-prepared student of good ability may complete the requirements for the doctorate in three years of full-time residence, more or less than three years may be required. It should be understood, however, that scholarly accomplishment is the basis on which requirements are met, not semester hours completed or time spent in the program.

The following residence requirements must be satisfied:

1. Students must earn *two consecutive semesters* (fall semester, spring semester) of full-time residence in the program in which they plan to be degree candidates at the University of Kentucky.
2. Students must earn *two consecutive terms* (nine hours or more) (summer, fall or spring) of residence at the University of Kentucky in full-residence status in the program in which they plan to be degree candidates *prior* to the qualifying examination.
3. Students must register for two full-time semesters of residence credit (769) immediately following the qualifying examination. It is not mandatory that students be on campus if the requirements of No. 1 have been met. Full-time residence credit is given the semester of the qualifying examination if:
 - a. Students register for residence credit 769 for nine credits. (In order for the Summer Term to be included the student is required to register for 3 credits in the 4-week session and 9 credits in the 8-week session.)
 - b. Students complete the qualifying examination within six weeks after the first day of classes.
4. After the above requirements have been satisfied, candidates must register for Residence credit 769 (0 credit hours) each semester until the dissertations are completed and successfully defended unless the program requirements differ. No fees will be assessed.
5. It should be understood that the above residence requirements are the *minimum requirements* of The Graduate School. Candidates must meet the requirements of their programs.

Language Requirements

As stated in the specific program description, an applicant must have a reading knowledge of one or two modern

foreign languages. The language or languages accepted are French, German, or Russian. However, with the approval of the student's special committee, the Director of Graduate Studies in the area, and the Graduate Dean, certain substitutions may be made:

1. Another language may be substituted if the student's scholarly needs will be better served if the approval of the adviser and the Dean of The Graduate School are granted.
2. In special cases fluency in one foreign language may be substituted for a reading knowledge of two languages.

Students must register for a language course or courses as a part of their course load if after four semesters of full-time graduate work (i.e., above the A.B.) the foreign language requirement has not been satisfied. **The language requirement must be satisfied before the applicant may be admitted to the qualifying examination.** The acceptable ways for satisfying this requirement are given in the section, "Requirements for the degrees of Master of Arts and Master of Sciences."

The Qualifying Examination

A Qualifying Examination is required of all applicants for the doctorate in order to determine whether the applicant should be admitted to candidacy. Normally this examination is prepared by the student's Special Committee (see The Student's Adviser and Special Committee Section) and should be taken during or after the student's fourth semester of full-time graduate study, or the equivalent. The qualifying examination shall be both written and oral. The examination is scheduled in writing. A copy of the announcement is sent to the Dean of The Graduate School. The special committee reports to the Dean the result of the examination within 60 days of the beginning. If the result is failure, the committee recommends the conditions to be met before another examination may be administered. The minimum time before another examination may be given is four months. The same committee, or as many of the members as are available, plus those added by the Dean to fill vacancies, gives the second examination. A third examination may not be allowed.

The Dissertation

Each candidate must present a dissertation which is the result of original research. The dissertation must be in conformity with the instructions prepared by The Graduate School. For specific instructions regarding the format of the dissertation, the student should obtain a copy of *Instructions For The Preparation Of Theses and Dissertations* from The Graduate School office.

Each graduating doctoral student will pay dissertation fees. Payment will be made at the Billings and Collection Office.

Copyright

Dissertations may be copyrighted by the student (1) signing the Copyright Authorization on the Microfilm Agree-

ment Form which is completed after the thesis format check in The Graduate School, (2) paying the copyright fee of \$20 (this copyright fee is in addition to the \$30 dissertation fee), and (3) including a copyright notice in the front of the dissertation. The notice is a single sheet on which is centered the heading:

Copyright by
(name of student)
(year)

The Final Examination

The student has two options for presenting the dissertation to The Graduate School.

1. Present the completed dissertation to The Graduate School and, after it is accepted, take the final examination. Modifications specified by the committee can be made following the examination.
2. Present an approval sheet signed by a majority of the special committee (including the Director of the Dissertation) to The Graduate School indicating that the special committee has in hand a draft of the dissertation. *This draft must satisfy all requirements of The Graduate School and be complete in content and format with the exception of pagination.* Following the final examination, the student must make modifications which the committee specifies as being necessary. The final copy will be submitted together with an approval form signed by the Chairman of the Special Committee and the Director of Graduate Studies. *The dissertation must be submitted to The Graduate School in final form within two months after the final examination.* If the student plans to graduate the semester in which the final examination is taken, the dissertation must be presented and accepted by The Graduate School by the last day of that semester.

The examining committee consists of a minimum of five persons appointed by the Dean of The Graduate School with the Director of Graduate studies (or delegate) serving as chairman. Other members include the Dissertations Director, a third representative of the department, a representative of the minor area, if there is a minor area, and one member of the Graduate Faculty associated with neither the major nor minor areas appointed by the Dean of The Graduate School. The President of the University and the Dean of The Graduate School are ex officio members of all examining committees. The recommendation for a final examination must be filed with The Graduate School at least two weeks prior to the date of the examination. Examinations must be given not later than eight days before the last day of classes of the semester in which the degree is to be awarded. The final examination includes a defense of the dissertation and may be as comprehensive in the major and minor areas as the committee desires to make it. In all decisions the majority opinion of the committee prevails. If the committee is evenly divided, the candidate fails.

If the candidate fails, the committee may recommend to the Graduate Dean the conditions under which the candi-

date may have another examination. This examination will be administered by as many of the original committee members as are available, plus new members appointed by the Dean to fill vacancies.

If the student passes this examination, recommendation for the degree will be made for the next commencement provided the residence requirements have been satisfied. (See Section: Residence Requirements.) All final examinations are open to the University community.

Combined Medical and Graduate Studies

Students combining studies toward an M.D. degree and a Ph.D. degree in one of the established programs of The Graduate School must be admitted to both programs. Before applying for admission to The Graduate School the applicant should consult with the Director of Graduate Studies of the graduate area of interest.

Students admitted to combined programs will register both in the College of Medicine and in The Graduate School during each semester in which work applying to both degrees is being taken. Graduate courses (500 level) which are regular parts of the medical curriculum also require dual registration if they are to apply toward the graduate degree. In view of the different grading systems currently employed, instructors of courses requiring dual registration will provide H, P or U grades to the College of Medicine and A, B, C, or E grades to The Graduate School.

Students enrolled in the regular medical curriculum will pay the tuition and fees of the College of Medicine. When not enrolled in the regular medical curriculum, they will pay Graduate School fees in proportion to the amount of graduate work taken.

Doctor of Business Administration

(See program section.)

Doctor of Musical Arts

(See program section.)

Joint-Doctoral Programs With Other Universities

Doctoral programs in education are offered jointly between the University of Kentucky and the other state universities: Eastern, Morehead, Murray, and Western. These programs permit qualified candidates to complete approximately one year of graduate work above the master's degree at the cooperating university. A minimum of 18 credit hours of course work, the Qualifying Examination and the dissertation must be completed at the University of Kentucky, and a minimum of one academic year must be spent in full-time residence on the Lexington campus. The work of each candidate is directed by a joint faculty committee from both institutions.

Persons interested in these programs should confer with

the Dean of The Graduate School at the cooperating university, or the Associate Dean for Graduate Studies in Education at the University of Kentucky. Applications may be filed for review by a joint screening committee. Admission will depend upon academic standing, scores on standardized examinations, and personal references.

There are available joint programs in Musicology and Pharmacology between the University of Kentucky and the University of Louisville. Inquiry should be made to the Director of Graduate Studies at the University of Kentucky.

REGULATIONS GOVERNING GRADUATE WORK IN THE COLLEGE OF EDUCATION

The College offers the following degrees: Master of Arts in Education, Master of Science in Education, Master of Science (only in the Department of Health, Physical Education, and Recreation), Specialist in Education, Doctor of Education, and Doctor of Philosophy.

Graduate work is also provided for persons seeking Rank I or II classification.

Rank II classification may be achieved by the completion of a master's degree or the "Planned Fifth Year Program." The "Fifth Year" is a program of 32 semester hours for persons who hold bachelor's degrees and a teaching certificate. A minimum of 18 hours must be completed at the University of Kentucky. Of the 32 hours at least 12 must be in professional education, and at least 12 must be in fields outside education.

Rank I classification requires the completion of: (1) 30 hours of approved graduate level credit in addition to the requirements for a Rank II classification, or (2) 60 hours of approved graduate level credit including the master's degree.

Each student's graduate curriculum must be a well-rounded program of courses related to the student's major interest and approved by the adviser. In cases of deficient preparation the adviser, with the approval of the Associate Dean for Graduate Studies in Education, determines prerequisite undergraduate courses to be taken. Each department has designated one or more faculty members to direct graduate studies in that department. Specific questions regarding programs may be referred to the Directors of Graduate Studies.

The two plans which lead to the degree of Master of Arts in Education or Master of Science in Education are Plan A and B, described earlier under requirements for the M.A. and M.S. degrees.

MASTER OF ARTS IN EDUCATION

The Master of Arts in Education is the program selected by candidates seeking initial or renewal certification for work in school settings. The Master of Science in Education is the program selected by candidates seeking to pursue non-certificate areas of concentration within Education and/or to prepare in fields auxiliary to education such as community counseling, rehabilitation counseling, etc.

A Master of Arts in Education degree will lead to a Standard Certificate and Rank II for pay purposes.

The plan which leads to the degree of Master of Arts in Education is outlined below:

1. All candidates for the Master of Arts in Education degree must meet the requirements for a valid teaching certificate, based on a four-year baccalaureate program. These requirements are outlined in the general catalog of the University. If deficiencies are found, they should be overcome before proceeding with graduate work. The work required to overcome these deficiencies is in addition to the minimum graduate requirements for the degree.
2. a. A minimum of 24 semester hours of graduate work, with at least 12 semester hours in courses numbered 600 or higher, must be completed and a thesis presented, or
b. A minimum of 30 semester hours of graduate work, with at least 15 semester hours in courses numbered 600 or higher, must be completed.
3. At least 12 semester hours of graduate work must be in Education.
4. The total number of credits presented in Education, undergraduate and graduate, must be at least 30 semester hours.
5. At least 12 semester hours must be outside the College of Education for both elementary and secondary teachers except for teachers of vocational agriculture who take six hours outside Education.
6. An overall grade-point average of 3.0 (an average of B) or better must be earned in all graduate studies.
7. With the approval of his graduate adviser and the Dean of The Graduate School, a student may transfer from another accredited graduate school up to nine semester hours toward the satisfaction of the minimum requirements for a master's degree.
8. No graduate credit is given for courses taken by correspondence.
9. The Graduate Record Examination is required of all applicants prior to admission to graduate school. A final examination, either written and/or oral, shall be required. This examination is to be taken just prior to or during the session in which the degree is to be conferred.

Master of Science in Education

The Master of Science in Education degree is normally awarded to students pursuing programs of study which do not lead to certification. However, if a student already holds a valid teaching certificate, the Master of Science in Education degree will give Rank II for pay purposes and may, under some circumstances, renew the certificate. The Master of Science in Education degree may also endorse a valid teaching certificate for another approved teaching subject or fields.

The plan which leads to the degree of Master of Science in Education is outlined below:

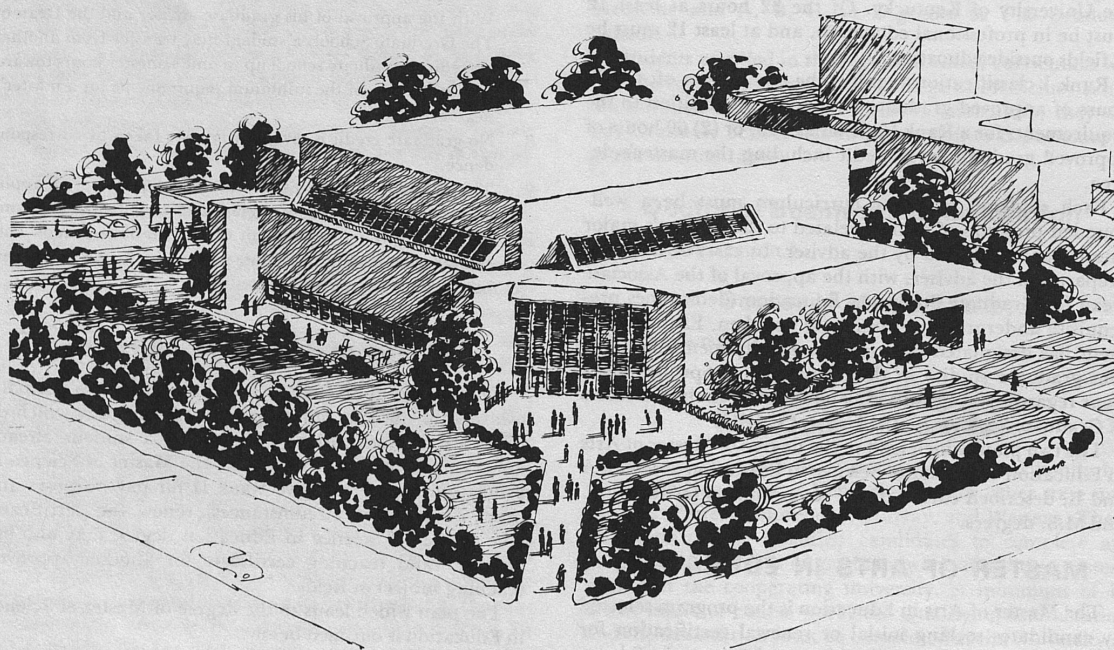
1. a. A minimum of 24 semester hours of graduate work, with at least 12 semester hours in courses numbered 600 or higher, must be completed and a thesis presented, or
b. A minimum of 30 semester hours of graduate work, with

- at least 15 semester hours in courses numbered 600 or higher, must be completed.
2. A minimum of 12 semester hours of graduate work in the College of Education is required.
 3. A minimum of six hours outside the College of Education is required, but individual programs may require additional work outside the College.
 4. An overall grade-point average of 3.0 (an average of B) or better must be earned in all graduate studies.
 5. With the approval of his graduate adviser and the Dean of the Graduate School, a student may transfer from another accredited graduate school up to nine semester hours toward the satisfaction of the minimum requirements for the master's degree.
 6. No graduate credit is given for courses taken by correspondence.
 7. The Graduate Record Examination is required of all applicants prior to admission to graduate school. A final examination, either written and/or oral shall be required. This examination is to be taken just prior to or during the session in which the degree is to be conferred.

DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education are the same as for the degree of Doctor of Philosophy with the following exceptions:

1. No foreign languages are required for the Ed.D. degree.
2. A minimum of 72 credit hours is required beyond the baccalaureate with a distribution providing for:
 - a. Completion of at least 21 credit hours within a single area of concentration. (See section on Education for options.)
 - b. At least 18 additional credit hours in supporting departments within Education, with a minimum of six hours in each of two departments outside the area of concentration.
 - c. At least 24 credit hours in disciplines outside Education which are supportive to the area of concentration.
 - d. A minimum of nine credit hours in research tool studies appropriate for this program.
3. Applicants shall declare at least one area outside the area of concentration at the time their special committees are ap-



pointed in order to facilitate the appointment of a committee member from outside Education.

The Committee on Graduate Admissions and Standards of the College of Education and the Graduate Dean will evaluate credits and residence to be allowed transfer students. It is understood, however, that the special committee may accept only such courses as contribute to the graduate program of the student.

The Special Committee

Each special committee for the Ed.D. degree will consist of the following:

1. A committee chairman from the department in which the candidate is majoring.
2. Two other Graduate Faculty members from the College of Education. At least one of these will come from a department outside of the student's major area.
3. Two other Graduate Faculty members. At least one of these must be outside the field of Education.
4. Three of the committee members must be full members of the Graduate Faculty.

The Final Committee

Each final examination committee for the Ed.D. degree shall have:

1. A chairman who is either the Director of the Dissertation or the Chairman of the Special Committee. If neither of the above are members of the student's department, the Director of Graduate Studies will serve as chairman.
2. Two other faculty members from the College of Education without regard to department affiliation.
3. At least one faculty member from the student's minor area.
4. One person from outside the College of Education who is not connected with the minor field. This person is the traditional outside member or The Graduate School representative.
5. Five committee members must be Full or Associate members of the Graduate Faculty, and at least three members must be full members of the Graduate Faculty.

Doctor of Philosophy (Education)

The Doctor of Philosophy degree in the field of education is offered in educational psychology and counseling and in Studies in Higher Education—a joint program of the departments of higher education and social and philosophical studies in education. (See requirements for the Ph.D.)

Specialist in Education

The degree of Specialist in Education is conferred upon a candidate who satisfactorily completes a post master's planned program in education under the general requirements of The Graduate School and the following special requirements:

Admission

The student, prior to admission to the program must (1) have a master's degree, (2) ordinarily have a standing of

3.4 or higher on all graduate work, (3) meet the requirements for a teaching certificate or have credentials appropriate to the field of specialization, and (4) have at least 30 credit hours in courses in education (undergraduate and graduate).

The student should file application with the Associate Dean for Graduate Studies in Education. The application will be considered by the department and by an admissions committee of the college. A student must be recommended by the major program and by the Committee on Graduate Admissions and Standards.

Program*

The student must earn a minimum of 30 credit hours of graduate work beyond the master's degree, of which at least 15 must be in courses numbered 600 or above.

A departmental committee is responsible for helping students plan individual programs. The program should contribute to specialization in a field but should not neglect the broader development of the individual.

The student must complete an independent research problem (equal to three but not to exceed six credit hours) and submit a written report, a copy of which is to be filed with the department directing the research.

With the approval of the Graduate Dean and of the major program, the student may transfer a maximum of nine hours of residence credit earned beyond the master's degree from an institution which is approved to offer work above the master's level.

*The Specialist in Education degree is offered in Curriculum and Instruction, Educational Psychology and Counseling, Higher Education, Social and Philosophical Studies, Special Education, and Vocational Education.

Final Examination

The final examination required of all candidates is administered by an examining committee consisting of at least three qualified members recommended by the adviser and the Director of Graduate Studies and appointed by the Dean of The Graduate School.

Visiting Scholars and Advanced Study

When appropriate resources are available at the time desired, the President of the University, upon the recommendation of the Dean of The Graduate School and the department affected, will welcome visiting scholars as guests of the University, and will grant the privilege of auditing seminars and research courses and of carrying on research in laboratories and libraries. Normally there will be no charge except for laboratory expenses. Negotiations for such arrangements should be conducted in advance through the Graduate Office.

Postdoctoral Fellowships

Post-doctoral fellowships may be available in various research departments. Information concerning the terms of the fellowships is available in the department. Post-doctoral fellows are required to register with The Graduate School through their department.

UK-NKU Graduate Center

The University of Kentucky and Northern Kentucky University established a Graduate Center at Northern Kentucky University beginning the fall semester of 1977 for the purpose of meeting graduate education needs for the Northern Kentucky region in some fields which have not been met, previously.

The Graduate Center utilizes faculty from the University of Kentucky and some faculty from Northern Kentucky University where there is expertise in one of the fields being offered in the Center.

Students interested in taking graduate courses at the Northern Kentucky Graduate Center should either contact the Center office at Northern Kentucky University or The Graduate School at the University of Kentucky for information about the curricula being offered through the Center.

Appalachian Center

The Appalachian Center is a multifunction Center for research, instruction, extended service, and archival activities relating to the Appalachian region. It administers interdisciplinary research programs, coordinates instructional, service, and archival programs based in other units of the University. It provides assistance and a focal point for graduate students who are interested in the study of the Appalachian region.

Research Program at Oak Ridge Associated Universities

The University is one of the sponsoring universities of the Oak Ridge Associated Universities located at Oak Ridge, Tennessee. Through this association, the University of Kentucky has available to it the facilities of the National Laboratories in Oak Ridge and of the research staffs of these laboratories. When masters and doctoral candidates have completed their course work, it is possible by special arrangement for them to go to Oak Ridge to work on their research problems and prepare their theses. In addition, it is possible for staff members of the University to go to Oak Ridge for varying periods, usually for not less than three months, for advanced study in their particular fields.

Among ORAU's activities are competitive programs to bring undergraduates, graduate students and faculty members to work on research problems at the research facilities of the Energy Research and Development Administration. Participants are selected by ORAU and the staffs of the facilities participating in the ORAU programs, which are Oak Ridge National Laboratory; the Oak Ridge Y-12 Plant; the Oak Ridge Gaseous Diffusion Plant; the Atmospheric Turbulence and Diffusion Laboratory in Oak Ridge; the Savannah River Laboratory and Savannah River Ecology Laboratory in Aiken, S.C.; the Comparative Animal Research Laboratory in Oak Ridge; the Puerto Rico Nuclear Research Center; and the Energy Research Centers at Bartlesville, Okla., Pittsburgh, Pa., and Morgantown, W. Va. The ORAU Institute for Energy Analysis,

the Special Training Division, the Medical and Health Sciences Division and its other programs are also open to qualified students and faculty members.

Students on Oak Ridge Graduate Fellowships receive stipends which vary according to the number of their dependents and the level of work they are doing. Staff members may work in Oak Ridge on stipends commensurate with their present salary and rank.

Information concerning stipends and other matters may be obtained from the office of The Graduate School or from the Chairman of the University Relations Division of the Oak Ridge Associated Universities, Box 117, Oak Ridge, Tennessee 37831.

Bulletins may be obtained by writing to the University Programs Office, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tennessee, 37830.

Southern Regional Training Program in Public Administration

Since 1945 the University of Kentucky, the University of Alabama, and the University of Tennessee have conducted a joint program in public administration leading to a master's degree. Part of the course work is completed at each institution, and three months of successful internship are required. Detailed information concerning the program may be obtained from the Department of Political Science of the University of Kentucky.

Nonservice Fellowships

The Graduate School administers a number of nonservice fellowships available to outstanding graduate students. Forms for making application may be obtained from The Graduate School Fellowship Office (329 Patterson Office Tower) and must be submitted not later than February 1 of each year, except that the deadline for dissertation year fellowships is February 23 and for summer fellowships, April 11. All fellowship applicants must submit scores on the GRE, or GMAT or MCAT examinations (verbal and quantitative) as part of their application.

Scholarships valued at \$490 per semester to be applied toward the cost of tuition are awarded to non-resident fellowship recipients. Tuition for resident and non-resident students is \$310 and \$800 per semester respectively for the 1978-79 academic year.

Recipients of fellowships must register as full-time students.

Graduate School Fellowships: These fellowships are for one academic year and are competitively renewable. The stipend is \$3100 per academic year.

Haggin Fellowships: These fellowships, endowed by Margaret Voorhis Haggin in memory of her father, George Voorhis, have a stipend of \$3100 per academic year. Each has a tenure of one academic year and is competitively renewable.

University of Kentucky Research Foundation Fellowships: The University of Kentucky Research Foundation supports fellowships of \$4500 for one academic year to assist graduate programs in recruiting outstanding students.

While the awards are not generally renewable, recipients may apply for other fellowships awarded by The Graduate School.

Dissertation Year Fellowships: Academic year fellowships open to doctoral students who have passed the qualifying examination and will be working full time on their dissertation. Each fellowship has a stipend of \$3400 per academic year and is not renewable.

Patterson Fellowships in Diplomacy and International Commerce: Patterson Fellowships are available from an endowment established by President James K. Patterson, the first president of the University. These fellowships are available to highly qualified applicants enrolled in the Patterson School interdisciplinary program in Diplomacy and International Commerce. The stipend is \$3100 per academic year and is competitively renewable.

The Dr. Paul I. Murrill Memorial Scholarship: This scholarship was established by Mrs. Paul I. Murrill in memory of her husband, who was a graduate of the University of Kentucky. It pays a stipend of \$4000 for one academic year to a student who possesses outstanding qualities of character and aptitude for graduate work. Preference is given to scholars in the field of chemistry.

The Robert N. Jeffrey Fellowships: These fellowships are supported by the Jeffrey Memorial Endowment Fund set up by Mrs. Helen Lasby Jeffrey in honor of her husband, Robert N. Jeffrey, who was formerly Plant Physiologist at the Agricultural Experiment Station. These fellowships pay a variable stipend up to \$4000 per academic year and are subject to renewal if the progress of the student is satisfactory. They are open to Ph.D. students in all areas of the University concerned with tobacco research.

The George W. Pirtle Fellowship: A grant of \$1000 per year is given by Mr. Pirtle, the first student to obtain the Master's Degree in Geology from the University, to a graduate student majoring in Geology. The award is made

upon the recommendation of the faculty of the Department of Geology and is based on need and promise of future achievement in the geological field.

Summer Fellowships: These fellowships are available for the two summer months (July, August) on a competitive basis to students who have been enrolled in The Graduate School for a minimum of two semesters. The stipend is \$350 per month.

Research and Teaching Assistantships

Most departments employ part-time teaching and research assistants whose holders pay the same fees as are assessed Kentucky residents. The stipends vary with the departments. Information concerning assistantships may be obtained from the various departments.

Miscellaneous Financial Support

Students may request funds from The Graduate School to defray partially certain expenses relating to their graduate education. These include funds for travel expenses necessary to dissertation research; certain dissertation costs, e.g., obtaining microfilm, reproducing and mailing questionnaires, etc.; for travel expenses incurred in presenting papers based on dissertation research at national meetings. Application forms are available in the Fellowship office.

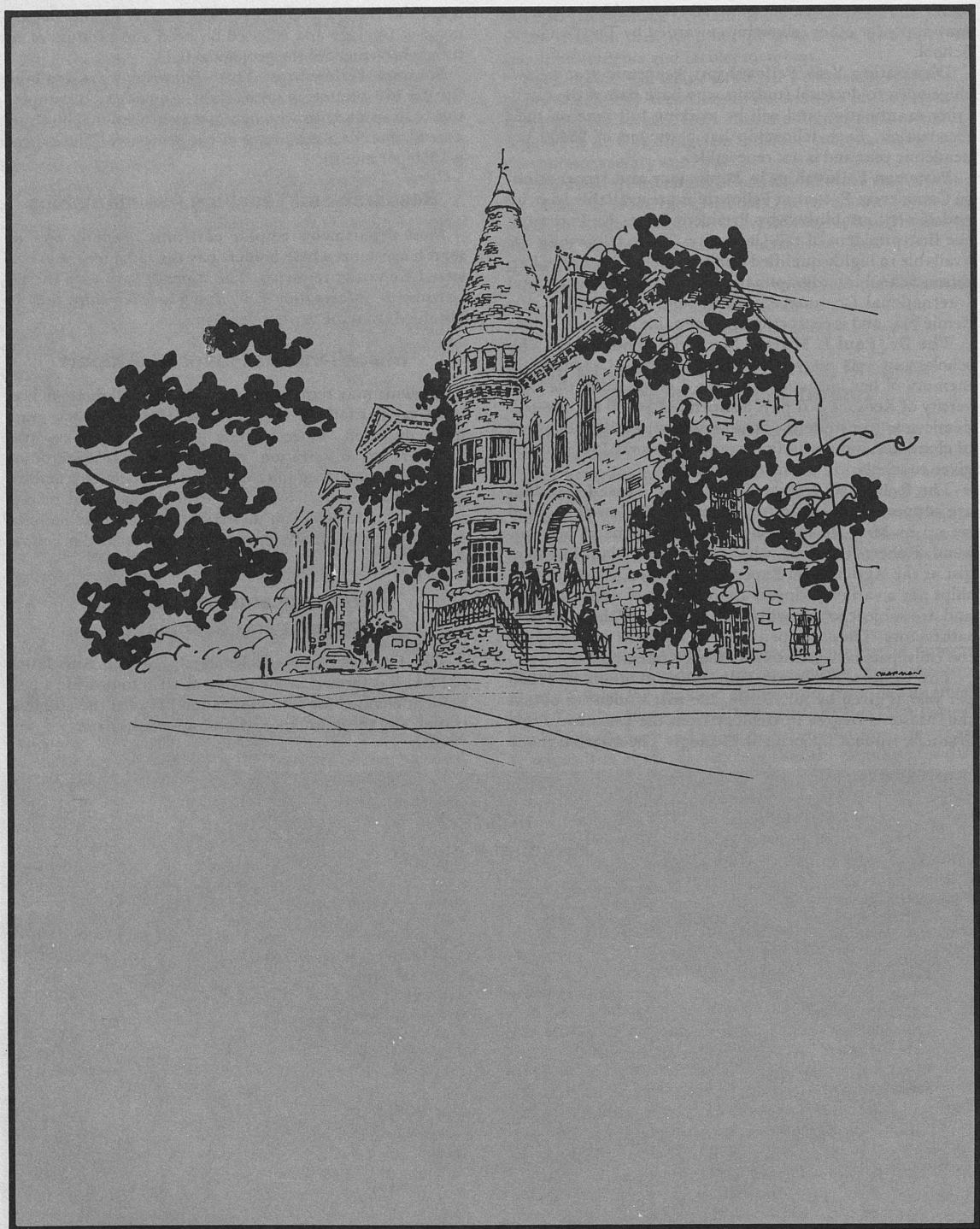
Graduate and Professional Student and Association

The Graduate and Professional Student Association (GPSA) was formed in the spring of 1969 to provide a permanent channel for communication between the administration and the graduate and professional students.

1978-1979 Graduate Council

Robert Hemenway	
English	1978-1979
Rupert Pickens	
French	1978-1979
Kathy Thornburg	
Home Economics	1978-1979
William J. Stober	
Economics	1976-1979
Robert W. Kiser	
Chemistry	1976-1979
John A. Deacon	
Civil Engineering	1976-1979

Ronald K. Atwood	
Curriculum & Instruction	1978-1981
Judith Worell	
Educational Psychology & Counseling	1978-1981
William Dennen	
Geology	1977-1980
George Mitchell	
Animal Sciences	1977-1980
Alfred D. Winer	
Biochemistry	1978-1981



This
stud

Acc
Adm
Agr

Agr

Ana

Ani

An
C
C
A
Art

Bio

Bio

Bu

Ch

Ch
Ch

Civ

Cle

Cl
Co

Co

Degree Requirements

This chart outlines minimum requirements for all graduate programs. Individual requirements may vary according to the need of the student. Where asterisks are listed, consult the Director of Graduate Studies in the specific program.

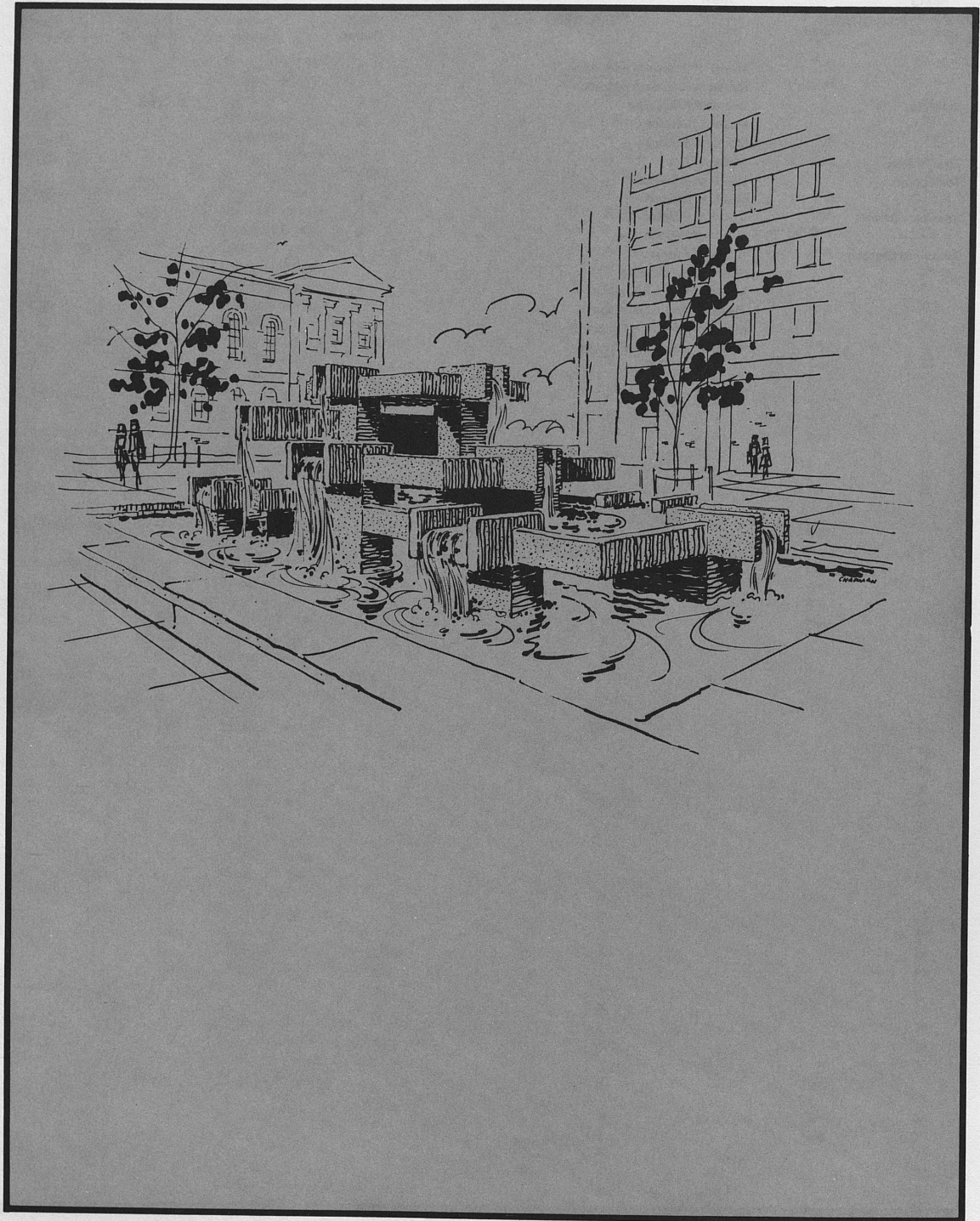
PROGRAM	DEGREE	Thesis Option	Non- thesis Option	Language Required	Credit Hours Required
Accounting	Master of Science in Accounting		X		30
Administration and Supervision	Doctor of Education	X			72*
	Specialist in Education		X		30
Agricultural Economics	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		36
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Agricultural Engineering	Doctor of Philosophy	X		One	*
	Master of Science in Agricultural Engineering	X			24
	Master of Science in Agricultural Engineering		X		30
Anatomy	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
Animal Sciences	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		36
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Anthropology	Doctor of Philosophy	X		Two	*
Option: General Anthropology	Master of Arts	X		One	24
Option: Applied Anthropology/Cultural	Master of Arts		X		33
Art (Studio)	Master of Fine Arts	X			45
(History)	Master of Arts	X		Two	24
Biochemistry	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
	Master of Science		X	One	30
Biology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
Business Administration	Doctor of Business Administration	X			*
	Master of Business Administration		X		30
Chemical Engineering	Doctor of Philosophy	X		One	*
	Master of Science in Chemical Engineering	X			24
	Master of Science in Chemical Engineering		X		30
Chemical Physics	Doctor of Philosophy	X		One	*
Chemistry	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
	Master of Science		X	One	30
Civil Engineering	Doctor of Philosophy	X		One	*
	Master of Science in Civil Engineering	X			24
Option: I	Master of Science in Civil Engineering		X		30*
Option: II	Master of Science in Civil Engineering		X		36
	Master of Science in Civil Engineering		X		30
Classical Languages and Literature	Master of Arts	X		One	24
	Master of Arts		X	One	30
Clinical Nutrition	Master of Science in Clinical Nutrition		X		30
Communication	Master of Arts	X			30
	Master of Arts		X		30*
Computer Science	Master of Science	X		One	24
	Master of Science		X	One	30

PROGRAM	DEGREE	Thesis Option	Non- thesis Option	Language Required	Credit Hours Required
Crop Science (Agronomy)	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science in Agriculture	X			24
Curriculum and Instruction	Doctor of Education	X			72*
	Specialist in Education		X		30*
	Master of Arts in Education	X			24
	Options: Reading, Secondary Education and Elementary Education				
	Option: Early Childhood Education	X			30
	Master of Arts in Education		X		30
	Option: Secondary Education	X			36
	Option: Secondary Education				24
	Option: Clinical and College Teaching		X		30
	Master of Science in Education		X		36
Dentistry	Master of Science in Dentistry	X			30
Diplomacy and International Commerce	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	30
Economics	Doctor of Philosophy	X		One	*
	Master of Arts		X	One	30
	Master of Science		X		30
Educational Psychology and Counseling	Doctor of Philosophy	X		One	*
	Doctor of Education	X			72*
	Specialist in Education		X		30*
	Master of Arts in Education		X		42
	Master of Science in Education	X			36
	Master of Science in Education		X		42
	Doctor of Philosophy	X		One	*
Electrical Engineering	Master of Science in Electrical Engineering	X		One	24
	Master of Science in Electrical Engineering		X		30
	Doctor of Philosophy	X		One	*
Engineering Mechanics	Master of Science in Engineering Mechanics	X			24
	Master of Science in Engineering Mechanics		X		30
	Doctor of Philosophy	X		Two	*
English	Master of Arts	X		One	24
	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
Entomology	Master of Science	X			24
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture	X			24
Forestry	Doctor of Philosophy	X		Two	*
French Language and Literature	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Arts	X			24
Geography	Master of Arts		X		30
	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Germanic Languages and Literatures	Doctor of Philosophy	X		One	*
	Master of Arts	X		One	24
	Master of Science	X		One	30
Health, Physical Education and Recreation	Master of Science		X		30
	Master of Science in Medical Radiation Dosimetry		X		31
	Master of Science in Radiological Health		X		32
Higher Education	Doctor of Philosophy**	X		One	*
	Doctor of Education	X			75*
	Specialist in Education		X		30*
	Master of Science in Education		X		30*

PROGRAM	DEGREE	Thesis Option	Non- thesis Option	Language Required	Credit Hours Required
	Doctor of Philosophy offered as Joint Program with Social and Philosophical Studies**				
History	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	36
Home Economics	Master of Science in Home Economics	X			24
	Master of Science in Home Economics		X		36
	Master of Science in Home Economics	X			24
Option: Early Childhood	Master of Science in Home Economics		X		36
	Master of Science in Home Economics	X			24
	Master of Science in Home Economics		X		36
Horticulture and Landscape Architecture	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
	Master of Arts	X		One	30
Library Science	Master of Arts		X	One	36
	Master of Science in Library Science		X		36
	Master of Science in Library Science	X			36
Mathematics	Doctor of Philosophy	X		Two	*
	Master of Science		X		36
	Master of Arts	X		One	30
Mechanical Engineering	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Science in Mechanical Engineering	X			24
Metallurgical Engineering and Materials Science	Master of Science in Mechanical Engineering		X		30*
	Master of Science in Nuclear Engineering	X			24
	Master of Science in Nuclear Engineering		X		30*
Microbiology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
History	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	36
Home Economics	Master of Science in Home Economics	X			24
	Master of Science in Home Economics		X		36
	Master of Science in Home Economics	X			24
Option: Early Childhood	Master of Science in Home Economics		X		36
	Master of Science in Home Economics	X			24
	Master of Science in Home Economics		X		36
Horticulture and Landscape Architecture	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
	Master of Arts	X		One	30
Library Science	Master of Arts		X	One	36
	Master of Science in Library Science		X		36
	Master of Science in Library Science	X			36
Mathematics	Doctor of Philosophy	X		Two	*
	Master of Science		X		36
	Master of Arts	X		One	30
Mechanical Engineering	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Science in Mechanical Engineering	X			24
Metallurgical Engineering and Materials Science	Master of Science in Mechanical Engineering		X		30*
	Master of Science in Nuclear Engineering	X			24
	Master of Science in Nuclear Engineering		X		30*
Microbiology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30

PROGRAM	DEGREE	Thesis Option	Non- thesis Option	Language Required	Credit Hours Required
School of Music	Doctor of Philosophy	X		Two	*
	Doctor of Musical Arts	X		One	*
	Master of Music	X			24
	Master of Music		X		30
	Master of Arts	X		One	24
Nursing	Master of Science in Nursing	X			34
	Master of Science in Nursing		X		34
Pharmaceutical Sciences	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
Pharmacology	Master of Science		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Philosophy	Master of Science		X		30
	Master of Arts	X		One	24
Physics and Astronomy	Master of Arts		X	One	30
	Doctor of Philosophy	X		Two	*
	Master of Science	X		One	24
Physiology and Biophysics	Master of Science		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Plant Pathology	Doctor of Philosophy	X		One	*
Plant Pathology, cont'd.	Master of Science	X			24
	Master of Science		X		30
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Plant Physiology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Political Science	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	30
Psychology	Doctor of Philosophy	X		One	*
	Master of Arts	X			24
	Master of Science	X			24
Public Administration	Master of Public Administration		X		45
Social and Philosophical Studies in Education	Doctor of Philosophy**	X		One	*
	Doctor of Education	X			72*
	Specialist in Education		X		30*
	Master of Arts in Education	X			25
	Master of Arts in Education		X		31
	Master of Science in Education	X			25
	Master of Science in Education		X		31
	Doctor of Philosophy offered as Joint Program with Higher Education**				
	Master of Social Work		X		54
	Doctor of Philosophy	X		One	*
Social Professions Sociology	Master of Arts	X			24
	Master of Arts		X		30
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Soil Science (Agronomy)	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		30
Spanish and Italian Languages and Literatures	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	30
Special Education	Doctor of Education	X			72*
	Specialist in Education		X		30*
	Master of Arts in Education	X			24*
	Master of Arts in Education		X		30*

PROGRAM	DEGREE	Thesis Option	Non- thesis Option	Language Required	Credit Hours Required
Statistics	Master of Science in Education	X			24*
	Master of Science in Education		X		30*
	Doctor of Philosophy	X		One	*
	Master of Science	X			29
Theatre Arts	Master of Science		X		35
	Master of Arts		X		30
Toxicology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Veterinary Science	Doctor of Philosophy	X		One	*
	Master of Science	X			24
Vocational Education	Doctor of Education	X			72*
	Specialist in Education		X		30*
	Master of Arts in Education	X			24
	Master of Arts in Education		X		30
	Master of Science in Education	X			24
	Master of Science in Education		X		30



CO

A

Agri
Cha
Dire
Agri
Cha
Cha
Dire
Glen
R. E.
Ani
Cha
Dire
Geo
Ento
Cha
B. C.
For
Cha
Dire
Geo
Hor
Cha
Dire
Ray
Pla
Cha
Step
Vete
Cha
Dire
Darl

Cen
Alli
Rich
Clin
Cha
Pau
Clin
Cha
Com
Cha

Programs and Directors of the Graduate School

COLLEGE OF AGRICULTURE

Page

Dean—Charles E. Barnhart
Associate Dean for Research and Graduate
Studies—Oran Little

PROGRAMS

Agricultural Economics	34
Chairman—Robert W. Rudd	
Director of Graduate Studies—Kurt Anschel	
Agronomy	35
Chairman and Director of Graduate Studies	
Chairman—A. J. Hiatt	
Directors of Graduate Studies—	
Glenn Collins, Crop Science	46
R. E. Phillips, Soil Science	78
Animal Sciences	36
Chairman—Virgil Hays	
Directors of Graduate Studies—Virgil Hays,	
George E. Mitchell, Jr.	
Entomology	54
Chairman and Director of Graduate Studies—	
B. C. Pass	
Forestry	55
Chairman—Bart Thielges	
Director of Graduate Studies—	
George Coltharp	
Horticulture	62
Chairman—A. S. Williams	
Director of Graduate Studies—	
Raymond Lockard	
Plant Pathology	72
Chairman and Director of Graduate Studies—	
Stephen Diachun	
Veterinary Science	82
Chairman—John T. Bryans	
Director of Graduate Studies—Robert W.	
Darlington	

COLLEGE OF ALLIED HEALTH PROFESSIONS

Dean—Joseph Hamburg

PROGRAMS

Center for Learning Resources for	
Allied Health	41
Richard D. Kingston	
Clinical Nutrition	44
Chairman and Director of Graduate Studies—	
Paul Thornton	
Clinical Pastoral Counseling	45
Chairman—Ralph S. Carpenter	
Community Health	45
Chairman—Joe Fred Sills	

Health Radiation Sciences	59
Chairman and Director of Graduate Studies—	
Joseph Sayeg	

COLLEGE OF ARTS AND SCIENCES

Dean—Art Gallaher Jr.
Associate Dean—Donald E. Sands

PROGRAMS

Anthropology	36
Chairman—William Adams	
Director of Graduate Studies—	
John van Willigen	
Thomas H. Morgan School of	
Biological Sciences	39
Director—S. F. Conti	
Biology	39
Director of Graduate Studies—D. O. Harris	
Microbiology	66
Director of Graduate Studies—S. F. Conti	
Chemical Physics	42
Directors of Graduate Studies—Audrey	
Companion, Fletcher Gabbard	
Chemistry	42
Chairman—William Wagner	
Director of Graduate Studies—	
Audrey Companion	
Classical Languages and Literature	44
Chairman—Hubert Martin, Jr.	
Director of Graduate Studies—Louis J. Swift	
Computer Science	46
Chairman—Thaddeus Curtz	
Director of Graduate Studies—A.C.R. Newbery	
Diplomacy and International Commerce	49
Director and Director of Graduate Studies—	
Vincent Davis	
English	53
Chairman—Joseph Bryant	
Director of Graduate Studies—John Demaray	
French	55
Chairman and Director of Graduate Studies—	
Phillip Duncan	
Geography	56
Chairman and Director of Graduate Studies—	
Karl B. Raitz	
Geology	57
Chairman—William Dennen	
Director of Graduate Studies—	
Wm. H. Blackburn	
German	58
Chairman and Director of Graduate Studies—	
Bernd Kratz	
History	60
Chairman—Joe A. Thompson	
Director of Graduate Studies—Carl B. Cone	

Mathematics	64
Chairman—John Mack	
Director of Graduate Studies—Donald Coleman	
Philosophy	70
Acting Chairman—Thomas Olszewsky	
Director of Graduate Studies—	
Michael Bayles	
Physics and Astronomy	71
Chairman and Director of Graduate Studies—	
Fletcher Gabbard	
Plant Physiology	72
Director of Graduate Studies—Everett Leggett	
Political Science	73
Chairman—Michael Baer	
Director of Graduate Studies—Dean Jaros	
Psychology	73
Chairman—Ronald Dillehay	
Director of Graduate Studies—Juris Berzins	
Slavic and Oriental Languages	75
Chairman—Paul G. Forand	
Sociology	77
Chairman—Willis Sutton	
Director of Graduate Studies—Gerald Slatin	
Spanish	78
Chairman—Daniel Reedy	
Director of Graduate Studies—Joseph R. Jones	
Statistics	80
Chairman—V. P. Bhapkar	
Director of Graduate Studies—Saul Blumenthal	

COLLEGE OF BUSINESS AND ECONOMICS

Dean—W. W. Ecton
Associate Dean—John L. Madden

PROGRAMS

Accounting	33
Chairman—James Knoblett	
Director of Graduate Studies—P. Michael Davis	
Business Administration	40
Chairman—M. Lynn Spruill	
Director of Graduate Studies—Joseph Massie	
Economics	49
Chairman and Director of Graduate Studies—	
David Richardson	

COLLEGE OF COMMUNICATION

Dean—Ramona R. Rush

Communications	45
Chairman of Communications—	
John R. Baseheart	
Director of Journalism—Ronald Farrar	
Director of Graduate Studies—Robert Murphy	

COLLEGE OF DENTISTRY

Dean—Merrill W. Packer

Dentistry	48
Chairman—Robert Biggerstaff	
Director of Graduate Studies—Stanley Saxe	

COLLEGE OF EDUCATION

Dean—George W. Denemark

Associate Dean for Graduate Studies—Edgar Sagan

PROGRAMS

Administration and Supervision	33
Chairman and Director of Graduate Studies—Charles Faber	
Curriculum and Instruction	46
Chairman—William L. Peters	
Director of Graduate Studies—Ronald Atwood	
Educational Psychology and Counseling	51
Chairman—Henry Cole	
Director of Graduate Studies—William Stilwell	
Health, Physical Education, and Recreation	58
Chairman—Hubert Garrett	
Director of Graduate Studies—Jay Kearney	
Higher Education	60
Chairman and Director of Graduate Studies—Charles Elton	
Social and Philosophical Studies	75
Chairman—Richard Warren	
Director of Graduate Studies—Clinton Collins	
Special Education	79
Chairman—Edward Blackhurst	
Director of Graduate Studies—C. M. Nelson	
Vocational Education	82
Chairman—Harold Binkley	
Acting Directors of Graduate Studies—Clayton Omvig, Agricultural Education, Distributive Education, Home Economics Education and Industrial Education, Business Education—Elaine Uthe	

COLLEGE OF ENGINEERING

Dean—James Funk

Associate Dean for Graduate Studies—Robert Grieves

PROGRAMS

Agricultural Engineering	35
Chairman—John Walker	
Director of Graduate Studies—I. J. Ross	
Biomedical Engineering	40
Chairman—(See Mechanical Engineering)	
Chemical Engineering	42
Chairman and Director of Graduate Studies—Robert B. Grieves	
Civil Engineering	43
Chairman—John A. Deacon	
Director of Graduate Studies—Yang H. Huang	

Electrical Engineering	52
Chairman—Earl Steele	
Director of Graduate Studies—Eugene B. Bradley	
Engineering Mechanics	53
Chairman—Donald Leigh	
Director of Graduate Studies—Millard F. Beatty	
Mechanical Engineering	65
Chairman—C. J. Cremers	
Director of Graduate Studies—Richard C. Birkebak	
Metallurgical Engineering	65
Chairman—Hans Conrad	
Director of Graduate Studies—Robert DeAngelis	

COLLEGE OF FINE ARTS

Dean—J. Robert Wills Jr.

Art	37
Chairman—Joseph Fitzpatrick	
Directors of Graduate Studies—James Pierce, Art History; Derrick Woodham—Fine Arts	
School of Music	66
Chairman—Joe B. Buttram	
Director of Graduate Studies—Wesley Morgan	
Theatre Arts	81
Acting Chairman—Wallace Briggs	
Director of Graduate Studies—Robert Wills	

COLLEGE OF HOME ECONOMICS

Home Economics	62
Dean and Coordinator of Graduate Studies—Marjorie Stewart	
Directors of Graduate Studies—Family Studies: Human Development and Resource Management—Lisa Barclay	55
Human Environment: Design and Textiles—Richard Rankin	63
Nutrition and Food Science—Abby Marlatt	69

COLLEGE OF LIBRARY SCIENCE

Dean—Timothy W. Sineath

Library Science	63
Director of Graduate Studies—Timothy W. Sineath	

COLLEGE OF MEDICINE

Dean—D. Kay Clawson

PROGRAMS

Anatomy	35
Chairman and Director of Graduate Studies—Harold Parks	

Behavioral Science	38
Chairman—Robert Strauss	
Director of Graduate Studies—Russell Jones	
Biochemistry	38
Chairman and Director of Graduate Studies—Robert Lester	
Medical Microbiology and Immunology	65
Acting Chairman—Norman Goodman	
Pathology	69
Chairman—Abner Golden	
Pharmacology	70
Chairman—William Martin	
Director of Graduate Studies—James Flesher	
Physiology	72
Chairman—Fred Zechman	
Director of Graduate Studies—Daniel Richardson	
Radiation Medicine	75
Chairman—Yosh Maruyama	

COLLEGE OF NURSING

Dean—Marion McKenna

Nursing	69
Director of Graduate Studies and Assistant Dean for Graduate Education—Juanita Fleming	

COLLEGE OF PHARMACY

Dean—Joseph Swintosky

Pharmacy	70
Associate Dean for Research and Director of Graduate Studies—H. B. Kostenbauder	

COLLEGE OF SOCIAL PROFESSIONS

Dean—Ronda S. Connaway

Social Professions	76
Director of Graduate Studies—Zafar Hasan	

THE GRADUATE SCHOOL

Public Administration	74
Director of Graduate Studies—Merlin Hackbart	
Assistant Director of Graduate Studies—John Wanat	
Toxicology	82
Director of Graduate Studies—T. Z. Csaky	
Associate Director of Graduate Studies—H. Wyman Dorrough	

The Graduate School Programs

The course listings in The Graduate School Bulletin include all courses approved through March 10, 1978.

GS 600 Special Topical Graduate Course. (2-3)
An interdisciplinary, topical or experimental course to be approved by the dean of The Graduate School. A particular course can be offered no more than twice under the number, GS 600. May be repeated to a maximum of six credits. Prereq: Consent of the instructor.

Accounting

Graduate Faculty: Professors Paul Michael Davis (Director of Graduate Studies), William W. Ecton (Dean), James A. Knoblett (Chairman), Donald L. Madden, Lewis D. McCullers (Associate Dean), Albert W. Patrick, Associate Professors Edward J. Schnee, Richard G. Schroeder, Raymond P. VanDaniker.

Master of Science in Accounting

The principal objectives of the Master of Science Program in Accounting are to develop the ability to perform, and report upon, significant research and to further the understanding of the relationship between accounting and other disciplines. Since the specific needs of individuals for advanced study differ, the program has been structured to provide maximum flexibility. Plan B is offered.

Requirements

1. Admission to the advanced degree program is open to students who hold a bachelor's degree from any accredited college or university, an undergraduate grade-point average of 2.7 or above, and at least 450 on the Graduate Management Admission Test.
2. Graduate study in accounting presumes a minimal preparation in economics and business, including the following areas (undergraduate credit can be applied). In certain cases, these areas may be satisfied within the M.S. program upon approval of the Director of Graduate Studies:

	Crs.
Principles of Economics	6
Principles of Accounting	6
Statistical Method	6
Business Finance	3
Marketing	3
Management	3
Business Policy	3
Additional minimal preparation is	

one course each in intermediate accounting, cost accounting, income taxation, and auditing.

3. A minimum of 30 semester hours must be presented in courses carrying graduate credit. At least 18 semester hours must be in courses reserved exclusively for graduate students and at least 12 of these must be in accounting.
4. The course requirements are:
 - a. One course in each of the following fields: Advanced Managerial Accounting, Income Taxation, Attest Function, Accounting Theory.
 - b. At least six semester hours of graduate credit outside the Department of Accounting, three of which must be production related.
 - c. A Computer Science or Data Processing.
5. The candidate must submit evidence of competence in statistics (successful completion of six semester hours of course work at the upper division level).
6. Minimal average of grade B in all courses attempted for graduate credit after being admitted to Graduate School. A minimal average of grade B must similarly be achieved for all accounting courses attempted after being admitted to Graduate School. Students obtaining two grades of C below a B average will be dropped by the Department.
7. Successful completion of a comprehensive examination.

401	Accounting Theory	(3)
403	Auditing	(3)
408	Cost Accounting	(3)
410	Accounting for Institutions and Regulated Industries	(3)
416	Accounting for Business Combinations	(3)
417	Income Taxation	(4)
419	Internship in Accounting	(3)
422	Functions of Accounting	(3)
515	C.P.A. Problems	(3)
517	Corporate Taxation	(2)
518	Controllorship	(3)
527	Taxation of Partnership and Subchapter Corporation	(2)
537	Estate and Gift Taxation	(2)
547	State and Local Tax Accounting	(2)
601	Research in Accounting Theory	(3)
603	Attest Function	(3)
608	Advanced Managerial Accounting	(3)
615	Advanced Professional Problems	(3)
617	Income Tax Development	(3)

619	Independent Study in Accounting	(1-3)
624	Accountometrics	(3)
628	Accounting for control and planning	(3)
701	Seminar in Accounting	(3)
703	Topical Seminar in Auditing	(1)
704	Topical Seminar in Data Processing	(1)
705	Topical Seminar in Statistical and Mathematical App706 Topical Seminar in Accounting Theory	(1)
707	Topical Seminar in Taxation	(1)
708	Seminar in Management Accounting	3
709	Topical Seminar in Not-For-Profit and Regulatory Accounting	(1)
795	Independent Study in Accounting	(1-6)

Administration and Supervision

Graduate Faculty: Professors Charles Faber (Chairman and Director of Graduate Studies), James B. Kincheloe, James Ogletree.

Associate Members: Assistant Professor Kenneth Brooks

The Department of Administration and Supervision offers programs leading to the Specialist in Education (Ed.S.) degree and the Doctor of Education (Ed.D.) degree. These advanced degree programs are designed to prepare candidates for leadership positions in public schools and other educational agencies or for the professorship in educational administration. The Department participates in a Joint Doctoral Program with regional universities.

In addition, the Department also offers programs leading to professional certification and to Rank I classification (for Kentucky salary purposes) for various types of administrative and supervisory positions, as follows:

1. Superintendent of Schools
2. Elementary Principal
3. Secondary Principal
4. Supervisor of Instruction
5. Director of Pupil Personnel Services

All certification programs require that the candidate must have earned a master's degree in an appropriate teaching field prior to completion of the program in administration and supervision.

The University of Kentucky is an active member of the University Council for Educational Administration, which was formed to promote, through inter-institutional cooperation, improvement in the

professional preparation of administrative personnel. A number of services are available to graduate students through this membership.

The University is a partner with the University of Louisville and the Jefferson County Public Schools in the operation of the Jefferson County Education Consortium, which provides a laboratory for research and development work in urban education. Internships for graduate students can be arranged with public school systems and other educational agencies.

A limited number of graduate assistantships are available through the Department. These involve up to 20 hours per week of service to the Department or some other unit of the University, designed in such a way that the work contributes to the educational development of the student. A modest stipend is paid for this service. The University also provides some financial aid, in the form of loans and fellowships.

For further information, write to the Director of Graduate Studies in the Department of Administration and Supervision, College of Education, University of Kentucky, Lexington, Kentucky 40506, requesting one or more of the following sets of materials:

1. Admissions Procedures and Forms
 2. Requirements for Professional Certificate and Rank I Programs
 3. Requirements for the Specialist in Education degree
 4. Information on Doctoral Study in Administration and Supervision
- 502 The Administration of Pupil Personnel .. (3)
- 601 Administration of Educational Organizations (3)
- 602 Organization and Administration of American Education (3)
- 603 Constitutional and Legal Basis of Public School Administration (3)
- 604 School Buildings and Equipment (3)
- 608 Internship in Educational Administration and Supervision (3)
- 628 Field Studies in Educational Administration and Supervision (3)
- 629 The Principal (3)
- 633 Administration and Supervision of Instructional Programs (3)
- 634 Administration of Educational Personnel. (3)
- 635 Business Administration and Finance of Public Education. (3)
- 639 The Supervisor (3)
- 649 The School Superintendency (3)
- 768 Residence Credit for the Master's Degree (1-6)
- 769 Residence Credit for the Doctor's Degree. (0-12)
- 771 Seminar in Administration. (1-3)
- 772 Seminar in Education (1)
- 785 Independent Work in School Administration (3)

- 792 Research in Educational Administration and Supervision (3)

Agricultural Economics

Graduate Faculty: Professors Kurt Ansel (Director of Graduate Studies), Garnett Bradford, Russell Brannon, Fred Justus, Alan Randall, John Redman, Robert Rudd (Chairman), Milton Shuffett, Eldon Smith. Associate Professors Robert Beck, Barry Bobst, Frank Bordeaux, David Debertin, Harry Hall, Loys Mather.

Associate Members: Assistant Professors Joe Davis, Larry Jones, Harold Love (Extension), Angelos Pagoulatos, and Lynn Robbins.

The degrees of Master of Science, Master of Science in Agriculture (Plan B available), and Doctor of Philosophy may be earned with a major in agricultural economics. The student is expected to concentrate, in addition to agricultural economics, in economics and subjects relating to research methodology. Those without sufficient background or training are expected to make up deficiencies indicated by the Department.

The beginning graduate student is advised to choose between two program emphases, applied or research, according to his career interests. The applied sequence prepares the student broadly in subjects that will have a continuing usefulness in farm management, agri-business, business, agricultural program administration, extension, foreign service and the like. Students in the applied program are not required to submit theses but must complete 36 graduate credits. The applied emphasis is designed for those who do not plan to undertake Ph.D. programs. The research emphasis in the M.S. program involves more work in the basic fields of economic theory, statistics and research methodology and is designed to prepare the student for the Ph.D. level work or a research related career. Students in the research program must submit a thesis and complete 24 graduate credits. Those with the applied emphasis in the M.S. Program will ordinarily require an additional semester of study to eliminate deficiencies in the basic fields if they decide to pursue Ph.D. work.

All students seeking the Ph.D. must satisfactorily complete a core curriculum of courses in statistics, economics, and agricultural economics, and demonstrate a reading knowledge of one modern foreign language. A dissertation must be completed. UK graduates with Ph.D. degrees in agricultural economics are now em-

ployed in administrative positions in academic institutions, business, government programs for agriculture, and foreign technical assistance in addition to those holding research, teaching, or extension appointments in academic institutions.

Study areas which the Ph.D. or Master's student may emphasize include agricultural marketing and price analysis, farm management and production economics, agricultural policy, resource, and environmental economics, and economic development. In addition to taking courses in these areas within agricultural economics, the student may select courses from a broad array of agricultural and social science disciplines which will complement his particular professional career interest. A graduate student handbook is available which provides information on the Department's graduate program and details the Ph.D. core curriculum and the recommended content of the two emphases in the Master's Degree program.

AGRICULTURAL MARKET ORGANIZATION AND PERFORMANCE

- 522 Cooperatives in Agri-business (3)
- 533 Agri-business Logistics Management (3)
- 606 Advanced Agricultural Marketing (3)

AGRICULTURAL POLICY

- 532 Agricultural Policy (3)
- 640 Advanced Agricultural Policy (3)

FARM MANAGEMENT

- 408 Farm Records and Business Analysis (3)
- 502 Advanced Farm Management (3)
- 534 Rural Real Estate Appraisal (3)

PRODUCTION ECONOMICS

- 503 Production Economics (3)
- 503 Production Economics (3)
- 620 Advanced Production Economics I (3)
- 621 Advanced Production Economics II (3)

AGRICULTURAL PRICES AND FINANCE

- 441 Agricultural Financial Management (3)
- 531 Agricultural Price Analysis (3)
- 650 Advanced Agricultural Prices (3)

ECONOMICS DEVELOPMENT

- 535 Economics Development of Rural Regions of the United States (3)
- 626 Agriculture and Economics Development (3)

GENERAL AGRICULTURAL ECONOMICS

- 480 Special Problems in Agricultural Economics (3)
- 580 Special Problems in Agricultural Economics (1-3)
- 590 Introduction to Quantitative Economics .. (3)
- 660 Research Methods in Agricultural Economics (3)
- 661 Programming Models in Agricultural Economics (3)

768	Residence Credit for the Master's Degree . . .	(1-6)
769	Residence Credit for the Doctor's Degree . . .	(0-12)
770	Agricultural Economic Seminars . . .	(0)
780	Special Problems in Agricultural Economics . . .	(1-3)

NATURAL RESOURCES AND ENVIRONMENTAL ECONOMICS

445	Introduction to Resource and Environmental Economics . . .	(3)
545	Natural Resource and Environmental Economics . . .	(3)
645	Natural Resource Economics . . .	(3)
646	Intertemporal Allocation of Natural Resources . . .	(3)

Agricultural Engineering

Graduate Faculty: Professors Billy Barfield, Tom Haan, Blaine Parker, Joe Ross (Director of Graduate Studies), John Walker (Chairman). Associate Professors Joe Bunn, Wiley Henson, Edward Smith, Gerald White.

Associate Members: Assistant Professor Otto Loewer (Extension), Linus Walton, Larry Wells.

The Agricultural Engineering Department offers programs leading to the M.S. in Agricultural Engineering (Plan A and Plan B available) and the Ph.D. degree.

The agricultural engineering graduate program has as its objectives the development of:

1. The ability to plan and conduct research and design involving the application of the engineering science to biological and agricultural systems.
2. The understanding of the mathematical, physical, and biological sciences to permit the reading and understanding of the present and future literature in these and related fields.
3. The skills required to use precision instruments, techniques and computers useful in research and design.
4. The ability to make sound engineering and management decisions.
5. The ability to teach college level courses in agricultural engineering, particularly at the doctoral level.

In the attainment of the above objectives the graduate student will combine courses in agricultural engineering, the physical sciences, other engineering fields, and the biological sciences in developing a program of study. The advanced degrees, however, are primarily research degrees awarded for significant creative research accomplishment, not for the completion of a specified number of courses. Therefore, the program concentrates on a strong the-

sis or dissertation problem done under the supervision of the graduate faculty of the Department. Strong course support is essential if the thesis or dissertation problem is to be properly undertaken and completed.

The design-oriented non-thesis option is available for the Master's degree.

400	Farmstead Planning and Mechanization . .	(3)
401	Farm Power and Machinery . . .	(3)
405	Properties of Soils and Biological Materials as Related to Engineering . . .	(3)
406	Physics of Plant and Animal Environment	(3)
417	Introduction to Design of Agricultural Machinery . . .	(3)
427	Design of Agricultural Structures . . .	(3)
430	Farm Water Management . . .	(3)
431	Watershed Hydrology . . .	(3)
437	Soil and Water Conservation Engineering .	(3)
447	Processing and Food Engineering . . .	(3)
450	Special Problems . . .	(1-3)
503	Animal Waste Management . . .	(3)
505	Engineering Analysis . . .	(3)
519	Plant, Soil and Machinery Relationships .	(3)
525	Environmental Design for Biological Systems . . .	(3)
535	Advanced Soil and Water Conservation Engineering . . .	(3)
548	Advanced Agricultural Processing . . .	(3)
599	Topics in Agricultural Engineering . . .	(2-3)
606	Micrometeorology . . .	(3)
618	Advanced Plant, Soil, and Machinery Relationships . . .	(3)
628	Advanced Design of Structures for Biological Systems . . .	(3)
635	Applied Statistical Methods in Water Engineering . . .	(3)
645	Electromagnetic Radiation in Agricultural Engineering . . .	(3)
648	Energy and Mass Transfer in Agricultural Processing . . .	(3)
658	Instrumentation in Agricultural Engineering Research . . .	(3)
660	Similitude in Engineering . . .	(3)
750	Special Problems in Agricultural Engineering . . .	(1-3)
768	Residence Credit for Master's Degree . . .	(1-6)
769	Residence Credit for Doctor's Degree . . .	(0-12)
775	Seminar . . .	(0)
795	Thesis . . .	(0)

Agronomy

The Department of Agronomy offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees with majors in Crop Science or Soil Science. The Department also participates in an interdepartmental graduate program leading to the Ph.D. degree with a major in Plant Physiology.

See Crop Science, Soil Science, or Plant Physiology for detailed information about these graduate programs.

Anatomy

Graduate Faculty: Professors Robert Benton, William Cotter, Ira Fowler, Harold Parks (Chairman and Director of Graduate Studies), Harold Traurig, Mirosława Winer. Associate Professors William Elwood, Roger Lambson, Daniel Matulionis, Stephen Smith.

Associate Members: Assistant Professors William Martin and Raymond Papka. Professor Peter Bosomworth. Associate Professors William Gochenour and Norman Goodman are unassigned members of the Graduate Faculty from the College of Medicine.

The program of graduate studies in Anatomy is intended to provide educational opportunities for people with several different objectives. Some students will pursue graduate work in Anatomy with the intention of teaching in departments of anatomy; some will have already obtained a professional degree, such as an M.D. or D.M.D., and may be interested in obtaining specific training in some region or system of the body to complement their professional education. Others may study in Anatomy as a minor or simply for specific credit.

Preparation for graduate work in anatomy should include some course work in biological science along with other grounding in the sciences to the minimal extent of course work in quantitative analysis and organic chemistry, a term of calculus, and a year of college physics. Students with deficiencies in any of these areas may be admitted, but will be expected to complete their background early in the course of their graduate studies.

The Department is prepared to offer the M.S. and Ph.D. degrees with major training in gross human anatomy, microscopic human anatomy, embryology, endocrinology, genetics, and neuroanatomy. Also, a major interest can center in tissues, organs, regions or systems of the body, in which, for example, professional graduates such as dentists or orthopedic surgeons might wish to take specific training. Certain students with special needs will, with permission of the Director of Graduate Studies, be permitted to work toward the M.S. degree on Plan B, however, in most cases students will follow Plan A.

Potential applicants for graduate work in Anatomy are requested to write directly to the Chairman of the Department of Anatomy.

503	Independent Work in Anatomy . . .	(3)
511	Introduction to Anatomy . . .	(5)
512	Microscopy and Ultrastructure . . .	(3)
513	Developmental Anatomy . . .	(2)
516	Anatomy of the Nervous System . . .	(3)

529	Concepts of Morphology	(2)
530	Combined Histology and Special Oral Microanatomy	(5)
532	Systemic Gross Anatomy	(2)
533	Oral Histology	(2)
534	Anatomy of the Human Head and Neck	(3)
536	Human Embryology, An Abbreviated Course	(1)
538	Human Neuroanatomy, an Abbreviated Course	(1)
611	Regional Gross Anatomy	(8)
629	Techniques of Anatomical Research	(2)
631	Advanced Gross Anatomy	(3-5)
633	Advanced Developmental Anatomy	(2-5)
634	Advanced Endocrinology	(2-5)
636	Advanced Neuroanatomy	(3-5)
638	The Genetic Basis of Human Morphology	(2-5)
651	Special Projects in Anatomy of Head and Neck Correlated with Neuroanatomy	(3-5)
662	Ultrastructural Anatomy	(2-5)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(0-12)

Animal Sciences

Graduate Faculty: John Baker, Charles Barnhart, James Boling, Neil Bradley, Gary Cromwell, Ray Dutt, Donald Ely, Virgil Hays (Chairman and Co-Director of Graduate Studies), Roger Hemken, Jame Kemp, Bruce Langlois, Oran Little, George Mitchell (Co-Director of Graduate Studies), William Moody, Durward Olds, Patch Woolfolk. Associate Professors, John Begin, Leonard S. Bull, Joe Fox, Dal Kratzer, Robert Goodwill, Gerald Schelling, Paul Thornton, Frederick Thrift, Ray Tucker.

Associate Members: Professor Nelson Gay, Assistant Professor Lee A. Ed Gerton, Clair Hicks, Tim Stahly.

The degrees of Master of Science, Master of Science in Agriculture (Plan A and B are available) and Doctor of Philosophy are available with majors in the animal sciences. Programs in the Department are divided in the disciplinary areas of Animal Nutrition, Food Science, Genetics and Physiology. Special interests in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, muscle biology, dairy technology and food microbiology may be pursued within these areas.

Candidates for the Ph.D. degree are required to have a reading knowledge of one modern foreign language and to declare a minor outside the Department. On approval of the student's special committee, a minimum of 12 credits in not more than two departments may be substituted for the minor.

404	Sheep Science	(3)
406	Beef Cattle Science	(3)
408	Swine Science	(3)
410	Horse Sciences	(3)
412	Horse Husbandry Practices	(3)
420	Dairy Cattle Science	(3)

430	Sensory Evaluation of Foods	(3)
442	Poultry Science	(3)
462	Artificial Insemination and Fertility of Farm Animals	(2)
470	Animal Science Seminar	(1)
530	Food Microbiology	(4)
532	Advanced Food Microbiology	(5)
534	Food Chemistry	(4)
536	Food Processing	(4)
538	Food Fermentation and Thermal Processing	(4)
562	Advanced Genetics	(3)
564	Milk Secretion	(3)
580	Principles of Animal Nutrition	(3)
600	Methods and Techniques in Animal Sciences	(3)
630	Advanced Meat Science	(4)
660	Physiology of Reproduction	(3)
662	Population Genetics	(3)
664	Advanced Animal Breeding	(3)
680	Laboratory Methods in Animal Nutrition and Meats	(4)
681	Energy Metabolism	(2)
683	Protein Metabolism	(2)
684	Advanced Ruminant Nutrition	(3)
685	Mineral Metabolism	(2)
686	Advanced Nonruminant Nutrition	(3)
687	Vitamin Metabolism	(2)
688	Equine Nutrition	(2)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Animal Science Seminar	(1)
780	Special Problems in Animal Derived Foods	(1-4)
781	Special Problems in Genetics or Physiology	(1-4)
782	Special Problems in Animal Nutrition	(1-4)
790	Research in Animal Derived Foods	(1-6)
791	Research in Genetics or Physiology	(1-6)
792	Research in Animal Nutrition	(1-6)

Anthropology

Graduate Faculty: Professors William Adams (Chairman), Philip Drucker, Art Gallaher, Jr., Donald Hochstrasser, Marion Pearsall. Associate Professors Albert Bacdayan, Robert Biggerstaff, Michael Collins, Lathel Duffield, John Van Willigen (Director of Graduate Studies), Richard Warren.

Associate Members: Assistant Professors: Susan Abbott, Kenneth Barger, Billie DeWalt, Richard Levy, W. Precourt, Eugenie Scott, Helen Wiese.

The Department of Anthropology offers courses and research options leading to the Ph.D. degree in the areas of Applied Social Anthropology, Culture History (Ethnohistory and Archaeology), and Ethnology. The Applied Social Anthropology program offers specialization in Developmental Change, Education and Medicine. The Department offers two M.A. options: a general anthropology degree (Plan A) certifying a broad background in anthro-

pology, plus research competence in the collection and processing of primary data, and an applied anthropology degree (Plan B) which prepares the student for non-academic employment in Cultural Resource Management or in Applied Cultural Anthropology. The Plan A program requires a thesis and the Plan B program requires a practicum.

The Plan A Master's degree also functions as the entry into the departmental Ph.D. program. All incoming graduate students without the M.A. are treated initially as candidates for this degree. These students are expected to satisfy the requirements for the M.A. program, and take the M.A. comprehensive examination or the equivalent topical courses specified by the Department. Students who (1) excel in this program, (2) pass the M.A. comprehensive examination with a high score, and (3) demonstrate satisfactory research competence, may petition to by-pass the master's thesis. A reading knowledge of one modern foreign language is required for the M.A. degree in anthropology. The Ph.D. program requires either a reading knowledge of two foreign languages or a high degree of proficiency in reading, writing, and speaking one foreign language.

Students who complete the requirements of the Plan B Master's must meet the requirements of the Plan A degree before proceeding to the Ph.D. degree.

Incoming students who have earned a Master's Degree at other institutions will be expected to demonstrate the same broad background in anthropology as is required to earn the M.A. at the University of Kentucky. If deficient in this regard they may be required to take appropriate course work which is normally part of the M.A. program, before proceeding to work toward the Ph.D.

The following areas are represented in the individual research experience of members of the anthropology faculty: Oceania, Southeast Asia, South Asia, North Africa and the Near East, Sub-Saharan Africa, Europe, Latin America, and North America. Several members of the faculty have expertise in the study of rural English-speaking sub-cultures.

The Department participates in interdisciplinary research in the University's Center for Developmental Change and in the Water Resources Institute. The Department of Behavioral Science, College of Medicine, includes anthropologists on its

staff, and students with interests in medical anthropology are encouraged to take the behavioral science concentration. There are also anthropologists in the Department of Community Medicine (College of Medicine) and the Department of Social and Philosophical Studies (College of Education). Anthropology graduate students with appropriate interests are eligible for assistantships in the above fields.

Department standards for admission to graduate work in anthropology include an undergraduate department over-all average of B or better, a satisfactory score on the verbal and quantitative tests of the Graduate Record Examination, completion of a separate departmental application form, and three letters of recommendation. Write the Chairman, Admissions Committee, Department of Anthropology for additional information on departmental requirements and opportunities for financial assistance.

402	Human Identification	(2)
421	North American Indians	(3)
428	Contemporary Cultures and Societies in Southeast Asia	(3)
430	Comparative Religious Systems	(3)
438	Ethnology of the Near East and North Africa	(3)
442	New World Prehistory	(3)
490	Pre-Field Study Seminar	(3)
510	History of Anthropological Theory	(3)
512	Comparative Civilizations	(3)
515	Phonological Analysis	(3)
516	Grammatical Analysis	(3)
518	Language in Culture	(3)
519	Historical Linguistics	(3)
520	North American Indian Languages	(3)
523	Ethnology of Oceania	(3)
524	Mythology	(3)
525	Applied Anthropology	(3)
526	Culture and Personality	(3)
527	Culture Change	(3)
529	Survey of Medical Anthropology	(3)
530	Contemporary Latin American Cultures	(3)
531	Cultures and Societies of Sub-Saharan Africa	(3)
532	Legal and Political Anthropology	(3)
533	Social Anthropology	(3)
534	The Southern Appalachians: A Sociological Interpretation	(3)
536	Peasant Societies	(3)
538	Economic Anthropology	(3)
541	Archaeological Theory and Method	(3)
542	North American Archaeology	(3)
546	Prehistoric Meso-America and Peru	(3)
548	European and Near Eastern Archaeology	(3)
550	Field Studies in Anthropology	(1-6)
555	Eastern North American Archaeology	(3)
560	Ethnographic Principles and Practice	(3)
570	Regional New World Ethnography	(3)
580	Topics in Anthropology	(3)
581	Independent Work in Anthropology	(1-4)
582	Tutorial Seminar	(3)
585	Field Laboratory in Archaeological Research	(3-6)

605	Seminar in Method and Theory in Anthropology	(3)
610	History of Anthropology	(3)
611	Seminar in Ethnology	(3)
612	Seminar in Culture History	(3)
613	Seminar in Physical Anthropology	(3)
614	Field Methods in Linguistics	(3)
670	Seminar on Role Theory	(3)
690	Advanced Pre-Field Study Seminar	(3)
710	Seminar in Physical Anthropology	(3)
720	Seminar in Cultural Anthropology	(3)
721	Seminar in Regional Ethnography	(3)
725	Seminar in Applied Anthropology	(3)
727	Seminar on Socio-Cultural Change	(3)
731	Seminar in Comparative Social Organization	(3)
741	Seminar in Regional Archaeology	(3)
742	Advanced Seminar in Culture History	(3)
750	Graduate Field Study in Anthropology	(1-6)
764	Topical Seminar in Psychological Anthropology	(3)
765	Research Problems in Medical Anthropology	(3)
767	Practicum in Applied Anthropology	(1-6)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Seminar	(3)
790	Research Problems in Anthropology	(3)

Art

Graduate Faculty: Professors James Pierce (Director of Graduate Studies-Art History), John Tuska. Associate Professors Gerald Ferstman, Elizabeth Finkenshaedt, Donald Hoffman, Arthur Jones, Deborah Frederick, Lowell Jones, Arturo Sandoval, Robert Tharsing, Derrick Woodham (Director of Graduate Studies, Studio).

Associate Member: Assistant Professor Jane Peters.

The Department of Art requires as prerequisite to the Master of Arts degree undergraduate work equivalent to that offered in the Department for its art majors. Work toward the master's degree may be undertaken in two areas: (1) art history and criticism, and (2) art education.

Students admitted to the graduate program in art history are expected to have completed course work equivalent to an undergraduate major in art history (in no case, less than 18 hours of art history or less than six hours of art studio). Work toward the master's degree is undertaken under Plan A (see Requirements for the Degrees of Master of Arts and Master of Sciences, Plan A) with a total of 24 hours including the required Graduate Art History Seminar (A-H 750). At least two-thirds of the required hours must be in Art History or Museum Training courses. A satisfactory thesis must be presented and a final examination passed. It is also required that the student offer either course work or

substantial proof of ability to use more than one foreign language.

The program for the master's degree in art education is undertaken under Plan A with a thesis based on substantial research, or theory in art education. No courses required for certification in a 48-hour area of concentration may be admitted as course work relevant to the master's degree in art education.

Master of Fine Arts

Application for admission to graduate work leading to the degree, Master of Fine Arts, must be accompanied by a portfolio of creative work or photographs, or transparencies of such work. This material must be submitted by March 15th. In no case will this requirement be waived. Undergraduate art work must be substantially equal in quality, scope, and number of hours to the undergraduate major at the University of Kentucky.

The degree, Master of Fine Arts (M.F.A.), will be awarded on the completion of 45 hours of graduate courses. Of this, 36 hours must be in studio and closely related work; six hours must be in art history, and three hours must be in the Graduate Studio Seminar (A-S 793), which must be taken for three semesters.

The student will designate a major area, with the advice of a senior professor, at the outset of graduate work and will carry at least 12 hours in that area under the guidance of one professor selected as thesis adviser. Up to nine hours in relevant work outside the Department may be elected by the student in consultation with the adviser. A foreign language will not be required.

The degree, Master of Fine Arts, will be awarded not solely on the basis of work in formal courses, but also on the basis of creative work resulting in a satisfactory thesis exhibition, and the preparation of a written and photographic record in proper form for submission to the Graduate School. A-S 767 (Studio Thesis Project) to a total of six credits will be required for the preparation of the thesis. Work toward the thesis exhibition will begin at a time determined by the Department.

Candidates for the M.F.A. degree who hold an M.A. degree in studio work from another school will be required to complete a year's residence and 18 credits of graduate work at the University, including two semesters of Graduate Studio Seminar

(A-S 793) and all other requirements for the degree.

GENERAL COURSES

- 501 Basic Museum Training: Historical Art . . . (3)
- 502 Basic Museum Training: Contemporary Art (3)
- 768 Residence Credit for Master's Degree . . . (1-6)

ART EDUCATION

- 572 Art Education Workshop (1-6)
- 575 Art in Elementary Schools (3)
- 577 Art in Secondary Schools (3)
- 579 Seminar in Art Education (2)
- 599 Independent Work: Art Education (1-3)
- 670 School and Community Art (3)

ART-HISTORY

- 450 Seminar in Art History (3)
- 510 Studies in Ancient Art (3)
- 520 Studies in Medieval Art (3)
- 530 Studies in Renaissance Art (3)
- 540 Studies in Modern Art (3)
- 550 Selected Topics in the History of Photography (3)
- 590 Topical Studies in Art History (3)
- 592 Aesthetics (3)
- 594 Criticism of Art (3)
- 599 Independent Work: Art History (3)
- 610 Problems in Ancient Art (3)
- 620 Problems in Medieval Art (3)
- 630 Problems in Renaissance Art (3)
- 640 Problems in Modern Art (3)
- 690 Topical Problems in Art History (3)
- 750 Graduate Art History Seminar (3)
- 799 Independent Work: Art History (3)

ART-STUDIO

- 502 Advanced Drawing (3)
- 510 Painting III (3)
- 520 Printmaking III (3)
- 540 Advanced Fiber (3)
- 550 Sculpture III (3)
- 570 Ceramics III (3)
- 571 Ceramics IV (3)
- 595 Independent Work: Painting, Printmaking (3)
- 596 Workshop (1-6)
- 597 Independent Work: Advanced Sculpture and other Three-Dimensional Media (3)
- 610 Traditional and Experimental Media in Painting (3)
- 740 Problems in Fiber (3)
- 750 Problems in Sculpture (3)
- 767 M.F.A. Studio Thesis Project (1-6)
- 770 Problems in Ceramics (3)
- 780 Problems in Design (3)
- 793 Graduate Studio Seminar (1)
- 799 Problems in Painting and Printmaking . . (3)

Behavioral Science

Graduate Faculty: Professors Eugene Gallagher, John Haley, Garth Olde, Marion Pearsall, Robert Straus (Chairman), Associate Professors Russell Jones (Director of Graduate Studies), Thomas Garrity, Philip Moody.

Associate Members: Assistant Professor Helen Wiese.

A program of concentration or a minor in medical behavioral science is offered for doctoral candidates in sociology, anthropology, psychology or other behavioral science disciplines through the Department of Behavioral Science in the Medical Center. The concentration has three objectives:

1. Research training in a health-medical setting, designed to afford each student an opportunity to learn the basic skills and approaches to research design, data acquisition, and data analysis, through personalized, supervised participation in one or more research projects. Such training is arranged to include experimental, survey, and case-study methods, to insure the integration of research training with a student's program of courses and to culminate in a health-related topic for the doctoral dissertation. As far as possible, students in the concentration are provided office space in the Medical Center so that they may have ready access to resources and events.
2. An orientation to medical settings, including an enculturation to the social structure, attitudes, beliefs, values and objectives of health personnel and organizations, and the nature of behavioral science research in these areas.
3. An orientation to the several behavioral sciences; to their areas of overlap and interrelation as well as to their discrete contents, theories and methods.

Students may elect to minor in medical behavioral science by taking a group of approved courses with the sponsorship and guidance of a designated faculty member.

The concentration is partially supported by a training grant from the National Institute of Mental Health for Research Training in the Social Sciences, under which selected students are provided with traineeship stipends.

- 527 Society and Health (3)
- 529 Survey of Medical Anthropology (3)
- 546 Social Factors in Mental Health (3)
- 670 Seminar on Role Theory (3)
- 738 Seminar: Drug use as Deviant Behavior . . (3)
- 761 Interpersonal Processes in Critical Situations (3)
- 764 Topical Seminar in Psychological Anthropology (3)
- 765 Research Problems in Medical Anthropology (3)
- 766 Concepts in Medical Sociology (3)
- 767 Research Problems in Medical Social Psychology (3)
- 772 Topical Seminar in Medical Behavioral Science (1-3)
- 776 Seminar in Dependency Behavior (3)
- 777 Seminar in Mental Illness Concepts, Research and Policy (3)

- 778 Behavioral Factors in Selected Diseases . . . (3)
- 790 Research in Medical Behavioral Science . . (1-6)

Biochemistry

Graduate Faculty: Professors Charles Ambrose, Alfred Hu, John Hutton, Robert Lester (Chairman and Director of Graduate Studies), George Schwert, Associate Professors S. K. Chan, Alfred Winer.

Associate Members: Assistant Professors Mary Barkley, Mary Sue Coleman, Robert Dickson, Roger Laine, and Robert Rhoads.

The program of graduate studies in biochemistry is designed primarily for doctoral candidates who plan to pursue a research career in this field. Creative research in biochemistry requires broader training and more extensive laboratory experience than can be achieved at the master's level. Therefore, candidates for the master's degree will be accepted only under unusual circumstances.

As preparation for graduate work in biochemistry, students should have completed courses in chemistry through physical chemistry, in mathematics through the calculus and must have had one year of work in physics and in one of the biological sciences. Although students who have deficiencies in their preparation may be admitted to graduate study in the Department of Biochemistry, the time necessary for completion of their work will necessarily be lengthened. Although programs of study will be fitted to the preparation and interests of individual students, it is anticipated that most students will take advanced courses in chemistry and in physiology, cell biology, microbiology, zoology or botany.

Inquiries concerning availability of financial support for graduate students should be addressed to the chairman of the department.

- 401 Fundamentals of Biochemistry (3)
- 501 General Biochemistry (3)
- 502 General Biochemistry (3)
- 503 Plant Biochemistry (3)
- 517 Experimental Methods in Biochemistry . . (4)
- 610 Biochemistry of Lipids and Membranes . . (3)
- 611 Biochemistry and Cell Biology of Nucleic Acids (3)
- 612 Structure and Function of Proteins and Enzymes (3)
- 618 Seminar in Biochemistry (1)
- 619 Seminar in Biochemistry (1)
- 640 Research in Biochemistry (1-15)
- 769 Residence Credit for Doctor's Degree (0-12)
- 780 Topics in Biochemistry (1-3)

Thomas Hunt Morgan School of Biological Sciences

The Thomas Hunt Morgan School of Biological Sciences provides programs in biology leading to the Masters and Doctor of Philosophy degrees. The programs draw upon the various courses and faculty members in the biological sciences. The purpose of the graduate programs is to train participants as well-rounded biologists familiar with the main branches of the biological sciences and the auxiliary fields of mathematics, physics, and chemistry.

A student who receives a degree under the programs also will be sufficiently well-trained in one of the major branches of biology to be able to conduct research in that special field, as well as broadly enough trained to participate in the teaching program of a department of biology. Students will be expected to have a background of course work in the principal areas of biology, calculus and organic chemistry before starting their doctoral program.

Major work under the biological sciences program would be arranged to suit the preparation, needs and interests of the individual student. The work could be, for example in genetics and cytogenetics, ecology and evolution, vertebrate zoology, invertebrate zoology, microbiology, entomology, developmental biology, histology, parasitology, plant physiology, plant morphogenesis, algology, systematic botany, mycology, cellular biology, radiation biology, ultrastructure, etc.

Laboratory facilities and equipment are excellent for doctoral work in all branches of biology. A very good biology library containing over 32,000 volumes, and including many important American and foreign periodicals is available and is supplemented by over 200,000 volumes concerned with biology in the libraries of the College of Agriculture, the College of Medicine and the Departments of Chemistry, Physics, and Geology.

For appropriate courses see the listings in the various areas of biology.

Graduate programs offered within the Thomas Hunt Morgan School of Biological Sciences are Master of Arts or Science and Ph.D. degree program in Biology, and a Master of Science and Ph.D. program in Microbiology. School faculty also participate in a University-wide Plant Physiology program.

Biology

Graduate Faculty: Professors R. W. Barbour, T. C. Barr, W. J. Birge, S. F. Conti (Director), E. C. Crawford, W. H. Davis, J. E. Siskin. Associate Professors J. M. Baskin, J. C. Calkins, N. K. Das, D. O. Harris, (Director of Graduate Studies), J. J. Just, R. A. Kuehne, W. Meijer, N. J. Piscano, G. Rosenthal, P. S. Sabharwal.

Associate Members: Assistant Professors, P. Bonner, J. D. Clark, W. S. Cohen, P. Crowley, R. S. Hakim, D. J. Prior, J. M. Rawls, G. Uglem.

The Thomas Hunt Morgan School of Biological Sciences provides a program in biology leading to the degree of Master of Arts or Sciences and to the degree of Doctor of Philosophy.

Work on the masters can be either Plan A or Plan B. Plan A is ordinarily required but Plan B is permitted under certain circumstances. Almost all fields of study encompassed by biology are available to the student.

Major work under the Ph.D. program would be arranged to suit the preparation, needs and interests of the individual student. The work could be, for example, in genetics and cytogenetics, ecology and evolution, vertebrate zoology, invertebrate zoology, entomology, developmental biology, histology, parasitology, plant physiology, plant morphogenesis, algology, systematic botany, mycology, cellular biology, radiation biology, ultrastructure, animal physiology, neurobiology, etc.

The Director of Graduate Studies in Biology also serves as Director of the Master of Science and Master of Arts Programs in Biology.

404	Principles of Genetics	(3)
411	Models in Mathematical Biology	(3)
420	Biological Macromolecules and Life Processes	(3)
451	Introductory Ecology	(4)
465	Economic Botany	(3)
476	General Bacteriology	(4)
490	Applied Bacteriology	(2)
502	Principles of Physiology Lecture	(4)
503	Experimental Methods	(2)
508	Evolution	(3)
515	General Cell Biology	(3)
516	Plant Cytology	(4)
517	Plant Microtechnique	(3)
522	Independent Work in Zoology	(3)
523	Zoology Seminar	(1)
524	Botany Seminar	(1)
525	Special Problems in Botany	(1-3)
529	Developmental Biology	(3)
530	Plant Physiology	(3)
531	Laboratory in Plant Physiology	(2)
535	Comparative Neurobiology and Behavior	(3)
540	General Radiation Biology	(4)
542	Histology	(5)
544	Embryology	(5)

545	Embryology and Morphology of Vertebrates	(3)
546	Laboratory Studies of the Embryology and Morphology of Vertebrates	(2)
547	Embryology and Morphology of Vertebrates	(3)
548	Laboratory Studies of the Embryology and Morphology of Vertebrates	(2)
549	Comparative Endocrinology	(3)
550	Comparative Physiology	(5)
551	Plant Autecology	(4)
552	Taxonomy of Vascular Plants	(4)
553	Ichthyology	(4)
554	Mammalogy	(4)
555	Vertebrate Zoology	(4)
557	Herpetology	(4)
559	Ornithology	(4)
560	General Entomology	(4)
561	Medical Entomology	(4)
562	External Morphology of Insects	(4)
563	Parasitology	(4)
564	Insect Taxonomy	(4)
565	Limnology	(4)
568	Protozoology	(4)
569	Helminthology	(4)
570	Invertebrate Zoology	(4)
571	Algology	(4)
573	Mycology	(4)
574	Anatomy of Vascular Plants	(4)
575	Plant Pathology	(3)
576	Industrial Microbiology	(4)
580	Metabolism of Microorganisms	(4)
582	Virology	(3)
585	Pathogenic Bacteriology	(4)
590	Gnotobiotic Methodology	(2)
594	Immunology and Serology	(5)
615	Molecular Biology	(3)
617	Advanced Microtechnique	(3)
619	Cytogenetics	(4)
620	Genetic Structure of Populations	(3)
621	Topics in Modern Botany	(1-3)
625	Seminar in Animal Navigation	(2)
630	Experimental Techniques in Plant Physiology	(3)
632	Plant Morphogenesis	(5)
635	Insect Physiology	(4)
639	Research Projects in Biological Modeling	(3)
640	Biological Effects of Radiation	(3)
645	Special Topics in Endocrinology	(2)
655	Vertebrate Natural History	(4)
660	Advanced Animal Ecology	(3)
663	Experimental Parasitology	(4)
665	Insect Ecology and Behavior	(3)
667	Principles of Animal Systematics	(3)
670	Speciation	(3)
672	General Acarology	(4)
673	Experimental Mycology	(4)
678	Statistical Genetics	(3)
690	Bacteriology of Water and Sewage	(4)
694	Bacteriology of Foods	(4)
707	Contemporary Topics in Immunology	(3)
714	Microbial Genetics	(4)
716	Metabolism of Microorganisms	(4)
718	History of Bacteriology	(2)
720	Microbial Structure and Function	(3)
728	Developmental Genetics	(3)
732	Mineral Nutrition of Plants	(3)
734	Physiology of Growth and Development	(3)
735	Plant Metabolism	(3)
740	Mammalian Radiation Biology	(2)
755	Biosystematics	(3)
768	Residence Credit for Master's Degree	(1-6)

769	Residence Credit for Doctor's Degree	(0-12)
770	Seminar in Zoology	(1)
771	Seminar in Botany	(1)
772	Seminar in Microbiology	(0-1)
773	Seminar in Plant Physiology	(1)
774	Seminar in Genetics	(1)
782	Advanced Virology	(3)
795	Research in Zoology	(1-6)
796	Research in Botany	(1-6)
797	Research in Bacteriology	(3-6)
798	Research in Bacteriology	(3-6)
MB 768	Residence Credit for the Master's Degree	(1-6)
MB 769	Residence Credit for the Doctor's Degree	(0-12)
BOT 768	Residence Credit for Master's Degree	(1-6)
BOT 769	Residence Credit for Doctor's Degree	(0-12)
ZOO 768	Residence Credit for Master's Degree	(1-6)
ZOO 769	Residence Credit for Doctor's Degree	(0-12)

Biomedical Engineering

The biomedical engineering program is an option within the Mechanical Engineering Department graduate studies program.

Research programs now underway include the study of physiological and behavioral responses to environment stress (i.e., acceleration, rotation, etc.), characteristics and modeling of biological tissue and systems, development of instrumentation for biological monitoring, and related problems. Research is conducted in the laboratories of the Medical Center and the College of Engineering. Further information may be obtained by writing to the Director of Graduate Studies, Mechanical Engineering Department.

Business Administration

Graduate Faculty: Professors James H. Donnelly, James L. Gibson, Joseph L. Massie (Director of Graduate Studies), Associate Professors K. R. Balachandran, Philip K. Berger, Andrew Grimes, Joseph Gultinan, Keith Johnson, Martin Solomon, M. Lynn Spruill, (Chairman), Ralph Stever, Marc Wallace.

Associate Members: Associate Professor Donald Shannon, Assistant Professors John J. Bernardo, Michael Carpenter, John E. Dittich, Wesley Jones, Linda Krefling, James Lange, Lawrence K. Lynch, Tony McAdams, David E. Upton, Sam White.

Master of Business Administration

The program leading to the Master of Business Administration degree has two

basic objectives: (1) to enable the candidate to acquire an educational foundation contributory to long-range development for socially responsible business administration and (2) to equip the student for professional employment in some functional or other field of business upon completion of the program.

To attain these objectives, the program is designed to provide the student with the appropriate knowledge, understanding, skills and abilities, including:

1. An understanding of the processes of business administration and of the methods needed by business administrators when effectively coping with uncertainty.
2. A knowledge of the economics of business enterprise and of the dynamic environment and culture in which business firms operate.
3. An understanding of quantitative methods of analysis in business decision making, including the use of mathematical, statistical, and accounting approaches.
4. A knowledge of organizational relationships and behavior in business enterprises and of ways for promoting effective human relations, including contributions of the behavioral sciences.
5. The ability to solve complicated and realistic business problems by utilizing economics, business, and other professional literature and the specialized knowledge of other people, both in and out of the business firm, in order to present these findings effectively in both written and oral reports.
6. An understanding of the functional problems involved in operating a business enterprise, such as those pertaining to production, marketing and finance, and a knowledge in depth of the concepts, research findings, and currently useful generalizations within some functional area.

Requirements

1. Minimal requirements in order to be considered for admission are a bachelor's degree from an accredited college or university, and the total of a four-year grade-point average times 200 plus GMAT score must exceed 950; or total of junior senior grade-point average times 200 plus GMAT score in excess of 1000.
2. Since the MBA program is a 30-hour (1 year) program, entrance to the program presumes the following minimal prerequisites: (examples of acceptable courses at the University of Kentucky are given in parentheses):
Principles of Economics (ECO 260 and ECO 261)
Principles of Accounting (ACC 201 and ACC 202)

Statistical Method (STA 291 and ECO 391 or STA 670)

Business Finance (BA 345)

Marketing (BA 330)

Management (BA 335)

Introduction to Calculus (MA 123)

Some of the prerequisites and course work may be satisfied by taking BA 600, the M.B.A. module program offered each summer. Contact the M.B.A. program coordinator for details.

3. Graduate Courses:	Crs.
BA 635 Managerial Economics	3
BA 636 Research and Report Writing	3
ACC 628 Accounting for Control and Planning	3
BA 637 Administrative Behavior	3
BA 645 Corporate Financial Policy	3
BA 630 Advanced Marketing Management	3
BA 639 Business Policy and Strategy	3
One of the following:	
BA 652 Production Management	3
BA 650 Management Science I	3
Electives: Six hours of courses giving graduate credit	6
Total	30

Master of Business Administration with Area Specialization: Six-hour sequences of courses may be approved for those students wishing to specialize beyond the core in the following fields: Marketing, Finance, Management Science, Managerial Accounting, Managerial Economics, and International Business.

Additional requirements are:

1. Residence for at least two semesters at the University of Kentucky as a full-time student, or its equivalent as a part-time student.
2. Minimal average of grade B in all courses attempted for graduate credit after being admitted to Graduate School. Students receiving two grades of C below a B average will not be permitted to continue the MBA program.
3. Successful completion of a comprehensive final examination

Doctor of Business Administration

The basic purpose of the program leading to the Doctor of Business Administration degree is to enable persons who are seeking careers in collegiate business teaching, business research, or business consultation in acquiring a comprehensive, professional education appropriate to their goals.

Objectives

The Doctor of Business Administration degree is designed for persons who are seeking careers in collegiate teaching, business research, or business consultation. A basic purpose of the program is to develop a broad understanding of business administration, economic analysis, and related behavioral and quantitative disciplines. An appreciation of the administrator's point of view in decision making within an organizational setting, and the development of scientific methods and techniques in research investigations will be emphasized.

Requirements

1. Background Training in Business and Business Related Areas.
The D.B.A. is designed to provide specialization beyond the master's level. The educational background of each candidate will be reviewed by an admissions committee which will identify any deficiencies. In most cases, an M.B.A. from an accredited institution (A.A.C.S.B. accreditation) provides the background.
Applicants with previous graduate credits are evaluated generally according to the following rules, but each case is individually examined. A minimal grade-point average of 3.2 is required on all previous graduate credits. Also, students without GMAT scores must take these exams before admission, with minimal score of 500.
2. Core Requirements (21 credit hours):
 - a. Three hours of course work in administrative science
BA 735, Administrative Science I
 - b. Six hours of course work in research
BA 762, Research Methodology
A graduate course in research techniques appropriate to major interest
 - c. Six hours of course work selected from
ECO 660, Advanced Micro-economic Theory
ECO 661, Advanced Macroeconomic Theory
A graduate course directly supporting major research interest
 - d. Six hours of course work in quantitative analysis
BA 650, Management Science I
BA 750, Management Science II
3. Major and Minor Field Requirements:
The major field will consist of at least

12 hours of graduate credit course work. The minor field will consist of at least six hours of graduate credit course work. The currently available fields include:

Accounting
Business Policy
Finance
Human Resources Administration
Management and Organizational Behavior
Management Science
Marketing

In addition, fields from an outside department closely related to the major field, e.g., sociology, statistics, computer science, international economics, may be selected as a minor field. This course work must be approved by the D.B.A. Coordinator of the Department of Business Administration.

4. No foreign language is required.
 5. Written and oral comprehensive examinations are required in the major and minor fields.
 6. The dissertation will be based on original research on a significant topic. The dissertation will be defended in an oral examination
 7. Minimal average of grade B for graduate credit and in all courses attempted after being admitted to Graduate School. Students obtaining two grades of C below a B average will be dropped by the department.
- | | | |
|-----|---|------|
| 431 | Contemporary Marketing Problems | (3) |
| 432 | Marketing Strategy and Planning | (3) |
| 434 | Research in Marketing | (3) |
| 435 | Analysis of Organizational Behavior | (3) |
| 439 | Business Policy | (3) |
| 441 | Business Law II | (3) |
| 445 | Financial Management | (3) |
| 446 | Investments | (3) |
| 447 | Life Insurance | (3) |
| 448 | Property and Casualty Insurance | (3) |
| 450 | Quantitative Analysis in Management | (3) |
| 456 | World Business | (3) |
| 536 | Applied Personnel Management | (3) |
| 537 | Contemporary Problems in Industrial Relations | (3) |
| 551 | Advanced Business Data Processing and Information Systems | (3) |
| 556 | International Commercial Policy | (3) |
| 584 | Financial Markets and Institutions | (3) |
| 585 | Bank Management | (3) |
| 600 | Fundamentals of Business Administration | (12) |
| 630 | Advanced Marketing Management | (3) |
| 631 | Consumer Behavior | (3) |
| 632 | Distribution Channel Systems | (3) |
| 633 | Quantitative and Statistical Methods in Marketing Decision Making | (3) |
| 635 | Managerial Economics | (3) |

- | | | |
|-----|---|--------|
| 636 | Research and Report Writing | (3) |
| 637 | Administrative Behavior | (3) |
| 638 | Comparative International Management | (3) |
| 639 | Business Policy and Strategy | (3) |
| 642 | Business and Society | (3) |
| 645 | Corporate Financial Policy | (3) |
| 646 | Investment Management | (3) |
| 650 | Management Science I | (3) |
| 651 | Topics in Optimization | (3) |
| 652 | Production Management | (3) |
| 655 | Manpower Administration | (3) |
| 656 | International Marketing | (3) |
| 695 | Individual Work in Business Administration | (1-6) |
| 730 | Seminar in Marketing Theory | (3) |
| 731 | Seminar in Consumer Behavior | (3) |
| 732 | Seminar in Marketing Management | (3) |
| 735 | Administrative Science I | (3) |
| 736 | Organizations and External Systems | (3) |
| 737 | Organizations and Individual Behavior | (3) |
| 745 | Seminar in Financial Theory | (3) |
| 746 | Seminar in Managerial Finance | (3) |
| 747 | Decision Models in Finance | (3) |
| 750 | Management Science II | (3) |
| 751 | Seminar in Management Science | (3-6) |
| 761 | Seminar in Managerial Economics | (3) |
| 762 | Research Methodology | (3) |
| 763 | Research, Design and Analysis | (3) |
| 768 | Residence Credit for the Master's Degree | (1-6) |
| 769 | Residence Credit for the Doctor's Degree | (0-12) |
| 771 | Seminar in Business Administration | (3) |
| 772 | Organizational Development | (3) |
| 773 | Seminar in Organization Theory | (3) |
| 774 | Seminar in Human Resource Management | (3) |
| 781 | Independent Work in Business Administration | (1-6) |

Center for Learning Resources For Allied Health

Through a cooperative program with the College of Education and the Departments of Curriculum and Instruction, Educational Psychology and Counseling, and Higher Education, the Center makes available the Master of Science in Education degree. Also, in these departments and others, the Doctor of Education Degree is available to allied health specialists.

Persons with a baccalaureate degree in an allied health profession, with two years work experience in their discipline and a desire to teach in or administer an allied health education program, and who meet The Graduate School and departmental requirements, are eligible to make application for entry into these graduate programs.

Inquiries should be directed to: Center for Learning Resources for Allied Health, Medical Center Annex 3, University of Kentucky, Lexington, Kentucky 40506.

Chemical Engineering

Graduate Faculty: Professors Robert Grieves (Chairman and Director of Graduate Studies), Richard Ker-mode, Peter Skelland. Associate Professors William Conger, Charles Hamrin, Jr., Edward Moorhead, Leonard Peters, Thomas Schrodt.

Associate Members: Associate Professor George Crewe. Assistant Professor John Yamanis.

The Department of Chemical Engineering provides programs leading to the M.S. in Chemical Engineering and Ph.D. degrees. For the M.S. in Chemical Engineering, 24 hours of course work plus an acceptable thesis are required (Plan A). In certain exceptional cases, the thesis may be replaced by six additional hours of course work. Unique and highly specialized M.S. programs are available in energy engineering, air quality engineering, and environment pollution control. There is no language requirement for the M.S. in Chemical Engineering. For the Ph.D., a reading knowledge of French, German, or Russian is required.

The doctoral student may specialize in one or more of the following areas:

- Atmospheric pollution control
- Chemical reactor design
- Coal conversion processes
- Energy engineering
- Environmental engineering
- Non-Newtonian fluid mechanics
- Process control
- Thermodynamics
- Transfer processes
- Water pollution control

A wide selection of thesis topics is available under the direction of the Chemical Engineering faculty. For further information on financial aid, requirements, and departmental laboratories and facilities, contact the Department Chairman.

412	Staged Mass Transfer Processes	(2)
422	Rate Mass Transfer Processes	(3)
430	Advanced Problems in Chemical Engineering	(2)
431	Chemical Engineering Laboratory I	(2)
432	Chemical Engineering Laboratory II	(3)
455	Chemical Engineering Process Design I	(3)
456	Chemical Engineering Process Design II	(2)
462	Process Control	(3)
505	Analysis of Chemical Engineering Problems	(3)
515	Air Pollution Control	(3)
520	Equilibrium Thermodynamics	(3)
530	Transport I	(3)
550	Chemical Reactor Design	(3)
552	Polymeric Materials	(3)
555	Advanced Chemical Engineering Process Design I	(3)
560	Non-Newtonian Flow and Heat Transfer	(3)
565	Energy Engineering	(3)

570	Chemical Separation and Measurement for Chemical Engineers	(3)
580	Design of Rate and Equilibrium Processes for Water Pollution Control	(3)

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. For major work, a candidate must hold a bachelor's degree in Chemical Engineering or its equivalent.

615	Advanced Air Pollution Control	(3)
617	Air Sampling and Analysis	(3)
619	Community Health Aspects of Air Pollution Control	(3)
621	Nonequilibrium Thermodynamics	(3)
625	Properties of Gases and Liquids	(3)
631	Transport II	(3)
633	Diffusional Mass Transfer Operations	(3)
635	Staged Mass Transfer Operations	(3)
637	Biomedical Mass Transfer	(3)
638	Transport Phenomena in Packed and Fluidized Beds	(3)
642	Advanced Process Control I	(3)
643	Advanced Process Control II	(3)
650	Advanced Chemical Reactor Design	(3)
665	Equilibrium and Rate Processes of Coal Conversion	(3)
671	Basic Electrode Processes in Electrochemical Engineering	(3)
680	Biochemical Engineering	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Seminar	(0)
780	Special Problems in Chemical Engineering	(3)

Chemical Physics

Directors of Graduate Studies: Audrey L. Companion and Fletcher Gabbard.

The Department of Chemistry and the Department of Physics and Astronomy jointly provide a program in chemical physics leading to the degree of Doctor of Philosophy. Chemical physics is an overlapping area of the fields of chemistry and physics and, because of its relevance to such fields as astrophysics, thermonuclear physics, and biophysics, it currently enjoys a position of considerable esteem at a number of institutions. Experience shows that most exciting progress is made when members of the traditional fields of chemistry and of physics join together to form an operating unit of wide scope without the sacrifice of depth in the specialized areas. Students of either department are encouraged to follow a broader and richer curriculum by crossing departmental boundaries, both in the selection of courses and in the pursuit of independent research. The program encourages exchange of information in the following research components: atomic and molecular the-

ory, atomic and molecular processes, solid state theory and experiments, surface state physics, crystallography, nuclear magnetic resonance, statistical mechanics, biophysics, and mass spectroscopy. Course offerings in chemistry and in physics, including the special offerings in chemical physics (CHE 755 or PHY 755, Topics in Chemical Physics) are listed under the Department of Chemistry and the Department of Physics and Astronomy.

Chemistry

Graduate Faculty: Professors Henry Bauer, Audrey Companion (Director of Graduate Studies), Paul Corio, William Ehmann, Robert Guthrie, Robert Kiser, Kurt Niedenzu, John Patterson, Donald Sands, Paul Sears, Walter Smith, Jr., William Wagner (Chairman). Associate Professors: Rodney Black, Merle Pattengill, William Plucknett, Stanford Smith, Joseph Wilson.

Associate Members: Assistant Professors Thomas Attig, Carolyn Brock, Allan Butterfield, Douglas Nae, James O'Reilly, Laren Tolbert, Steven Yates.

The Department of Chemistry offers the Master of Science and the Doctor of Philosophy degrees. Plan A or Plan B may be used to satisfy the requirements for the M.S. degree. Students may major in areas of chemistry such as analytical, chemical physics, inorganic, organic, physical, and radio-nuclear. All candidates for the Ph.D. degree are required to serve as a teaching assistant for one semester.

A satisfactory reading knowledge of German is required for the M.S. degree. A satisfactory reading knowledge of either French, German or Russian is required for the Ph.D. degree. Foreign language reading requirements may be satisfied by any of the means specified by The Graduate School.

All new graduate students must take proficiency examinations in analytical, inorganic, organic, and physical chemistry. The results of these examinations are used as a guide in establishing the student's program of courses.

440	Physical Chemistry	(3)
441	Physical Chemistry Laboratory	(2)
442	Physical Chemistry	(3)
443	Physical Chemistry Laboratory	(3)
444	Physical Chemistry	(3)
490	Chemistry for High School Teachers	(3)
510	Advanced Inorganic Chemistry	(3)
512	Inorganic Chemistry Laboratory	(3)
520	Radiochemistry	(3)
521	Radiochemistry Laboratory	(1-2)
522	Instrumental Analysis	(4)

532	Spectrometric Identification of Organic Compounds	(1)
533	Qualitative Organic Analysis	(2)
538	Principles of Organic Chemistry	(3)
547	Advanced Physical Chemistry I	(3)
548	Advanced Physical Chemistry II	(3)
550	Physiological Chemistry	(4)
552	Physiological Chemistry	(4)
572	Seminar	(1)
580	Topics in Chemistry	(2)
582	Chemical Literature	(1)
610	Chemistry of the Transition Metals	(3)
612	Inorganic Chemistry of the Non-Metals	(3)
616	Nuclear Chemistry	(3)
625	Optical Methods of Analysis	(3)
626	Advanced Analytical Chemistry	(3)
633	Advanced Organic Chemistry	(3)
635	Advanced Organic Chemistry	(3)
640	Electrochemistry	(2)
645	Chemical Thermodynamics	(3)
646	Chemical Kinetics	(3)
647	Quantum Chemistry	(3)
710	Topics in Inorganic Chemistry	(2-4)
714	Non-Aqueous Solutions	(2)
720	Electrochemistry Methods of Analysis	(3)
726	Topics in Analytical Chemistry	(1-3)
736	Topics in Organic Chemistry	(2-4)
743	Molecular Structure	(3)
744	Statistical Thermodynamics	(3)
746	Topics in Physical Chemistry	(2-4)
747	Advanced Quantum Chemistry	(3)
755	Topics in Chemical Physics (Subtitle Required)	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
776	Graduate Seminar	(1)
780	Individual Work in Chemistry	(1-5)
790	Research in Chemistry	(1-5)

Civil Engineering

Graduate Faculty: Professors S. F. Adams, J. A. Deacon (Chairman), J. A. Dearing, H. Gesund, B. O. Hardin, Y. H. Huang (Director of Graduate Studies), J. W. Hutchinson, D. Kao, R. A. Lauderdale, R. S. Mateer, D. J. Wood, F. D. Wright. Associate Professors S. B. Biggers, V. P. Drnevich, E. G. Force, J. G. Rose, S. T. Wang.

Associate Members: Assistant Professors R. C. Howell, V. Kalyanaraman.

The Department of Civil Engineering offers the Master of Science in Civil Engineering (Plan A and Plan B available) Master of Civil Engineering (Plan B), and Ph.D. with specialization in the following areas:

Fluid mechanics and applied hydraulics
Geotechnical engineering
Rock mechanics and mining engineering
Structural engineering
Surveying and photogrammetry (M.S. only)
Transportation engineering
Water quality, and water resources and environmental engineering

These programs utilize courses from other departments and such inter-departmental programs are encouraged. Engineering Mechanics, Mechanical Engineering, Chemical Engineering, Agricultural Engineering, Mathematics, Geology, Biology, and Chemistry are some of the departments whose offerings contribute to the programs in Civil Engineering.

In addition to satisfying general Graduate School and College of Engineering admissions requirements, applicants for admission to the M.S.C.E., M.C.E., and Ph.D. degree programs in Civil Engineering must have been awarded a Bachelor of Science degree from an engineering program accredited by the Engineers' Council for Professional Development. This requirement may be waived for M.S.C.E. and Ph.D. applicants who have been awarded bachelors degrees other than engineering or from unaccredited engineering programs (including those offered by foreign institutions) if the applicant has received an acceptable score on the Advanced Engineering Test of the Graduate Record Examination. Students with undergraduate majors not in engineering must also take a certain number of undergraduate remedial courses.

Neither the M.S.C.E. degree nor the Ph.D. degree in Civil Engineering will be conferred unless the candidate has successfully completed, during his undergraduate and/or graduate careers, at least one basic course in at least four of the following seven areas: civil engineering materials, fluid mechanics, geotechnical engineering, surveying, structural or solid mechanics, transportation engineering, and water quality engineering.

The Department of Civil Engineering has many well equipped laboratories with active research programs in most areas. The research programs provide financial assistance for graduate students. In addition financial assistance is also available through teaching assistantships and a limited number of traineeships, fellowships and scholarships.

Additional information about the graduate program in Civil Engineering can be obtained by writing the Director of Graduate Studies, Department of Civil Engineering.

425	Soil Mechanics	(3)
485	Design of Timber Structures, Formwork and Falsework	(3)
487	Steel Structures	(3)
489	Design of Structures	(3)

492	Reinforced Concrete	(3)
515	Advanced Surveying	(3)
523	Photogrammetry	(3)
528	Geotechnical Engineering	(3)
529	Intermediate Fluid Mechanics	(3)
540	Pavement Analysis and Design	(3)
543	Development of Transportation Facilities	(3)
545	Civil Engineering Materials II	(3)
550	Engineering Hydraulics	(3)
553	Hydrology	(3)
554	Hydraulic Structures	(3)
555	Engineering Economy	(3)
559	Water Quality Control Facilities Design	(3)
568	Water Quality Control Laboratory I	(3)
580	Advanced Structural Mechanics	(3)

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. For major work, a candidate must hold a bachelor's degree in Civil Engineering or its equivalent.

599	Topics in Civil Engineering	(2-3)
621	Terrain Analysis	(3)
623	Finite Element Applications in Engineering	(3)
624	Experimental Methods in Soil Mechanics	(3)
625	Advanced Soil Mechanics	(3)
626	Groundwater and Seepage	(3)
628	Advanced Geotechnical Engineering	(3)
629	Soil Dynamics	(3)
635	Applied Statistical Methods in Water Resources	(3)
639	Air Transport Engineering	(3)
640	Highway Administration, Economics and Finance	(3)
641	Highway Traffic Characteristics	(3)
643	Urban Transportation Planning	(3)
644	Operational Effects of Geometrics in Transportation	(3)
645	Highway Design, Construction and Maintenance	(3)
646	Multidisciplinary Accident Investigation and Reconstruction	(3)
648	Traffic Laws, Ordinances and Controls	(3)
652	Open Channel Flow	(3)
655	Water-Resources Planning	(3)
660	Advanced Water Quality Control Facilities Design	(3)
662	Fundamentals of Water Quality Control I	(3)
663	Water Quality Control Laboratory II	(3)
664	Fundamentals of Water Quality Control II	(3)
669	Water Quality in Surface Waters	(3)
674	Mechanics of Liquid Flow in Pipes	(3)
678	Fluid Dynamics of Multiphase Systems	(3)
681	Dynamics of Structures	(3)
682	Experimental Structural Analysis	(3)
683	Optimum Design in Civil Engineering	(3)
686	Advanced Metal Structures	(3)
691	Advanced Reinforced Concrete Theory	(3)
692	Slab and Folded Plate Structures	(3)
693	Shell Structures	(3)
694	Advanced Structural Analysis I	(3)
695	Advanced Structural Analysis II	(3)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(0-12)
780	Special Design Problems in Civil Engineering	(1-6)
790	Special Research Problems in Civil Engineering	(1-6)

Mining Engineering

The program leading to the degree of Master of Science in Mining Engineering is offered through the Department of Civil Engineering. The objectives of this program are to provide an advanced level of applied science for use in the mining industry and to offer specified topics for research specialization. Twenty-four credit hours of course work plus an acceptable thesis (Plan A) or 30 credit hours of course work and reports on several research topics (Plan B) are required to fulfill program requirements.

Enrollment in the M.S. Min.E. degree program is open to qualified applicants with an undergraduate degree in Mining Engineering or other engineering and science fields. Persons with undergraduate degrees in fields other than Mining Engineering are required to make up deficiencies in undergraduate Mining Engineering courses.

Current research areas with applications to coal mining include the following: rock mechanics and ground control, operations research, mine ventilation, methane drainage, coal preparation, and mineral economics. In addition to the graduate courses in Mining Engineering, graduate courses in Civil Engineering and other disciplines may be used to satisfy degree requirements providing they are appropriate to the student's program of study.

Additional information about the graduate program in Mining Engineering can be obtained by writing the Director of Graduate Studies, Department of Civil Engineering.

MIN 451	Physical Properties of Rock	(2)
MIN 551	Rock Mechanics	(3)
MIN 562	Mine Design Project	(3)
MIN 572	Advanced Coal Preparation	(3)
MIN 581	Mine Valuation	(3)
MIN 599	Topic in Mine Engineering	(2-3)
MIN 634	Advanced Mine Engineering	(3)
MIN 636	Advanced Rock Mechanics	(3)
MIN 768	Residence Credit for the Master's Degree	(1-6)
MIN 771	Seminar in Mining Engineering	(1)
MIN 780	Special Problems in Mining Engineering	(1-6)

Classical Languages And Literatures

Graduate Faculty: Professors Hubert Martin, Jr. (Chairman), Lawrence Thompson. Associate Professor Louis Swift (Director of Graduate Studies).

Associate Members: Assistant Professors Jane Phillips and Robert Rabel.

The Department offers the M.A. degree under both Plan A and Plan B. While there are no specific course prerequisites for admission, a strong undergraduate concentration in at least one Classical language is recommended. The Department offers a limited number of teaching assistantships.

Each student will normally elect either Latin literature, Greek literature, or a combination of the two as an area of concentration. Individualized course programs, however, are arranged for students who are preparing themselves for secondary school teaching or who have an additional interest in a field other than the Classics. A comprehensive examination is required of all degree candidates; and, except under special circumstances, they are expected to demonstrate either a reading knowledge of a modern foreign language or a substitute skill approved by the Department. Most students complete their M.A. program in an academic year and a summer.

The University maintains an affiliation with the American School of Classical Studies at Athens and the American Academy in Rome, and the meetings of the Kentucky Society of the Archaeological Institute of America are regularly held on the University of Kentucky campus.

LATIN LANGUAGE COURSES

500	Latin Lyric Poetry	(3)
501	Lucretius and Epicureanism	(3)
502	Roman Historical Writers	(3)
503	Cicero	(3)
504	Roman Satire	(3)
505	Virgil and the Roman Epic	(3)
506	Medieval Latin	(3)
507	Roman Drama	(3)
511, 512	Studies in Roman Philology	(3 ea.)
603	Studies in Latin Literature of the Republic	(3)
604	Studies in Latin Literature of the Empire	(3)

GREEK LANGUAGE COURSES

552	Greek Epic and Lyric Poetry	(3)
553	Greek Philosophical Literature	(3)
556	Greek Dramatic Literature	(3)
557	Greek Historical Literature	(3)
561, 562	Studies in Greek Philology	(3 ea.)
601	Studies in Greek Literature I	(3)
602	Studies in Greek Literature II	(3)

CLASSICS IN TRANSLATION

424	Greek Literature in Translation	(3)
425	The Heroic Ideal: Greek and Roman Epic	(3)
426	Classical Drama: Tragedy and Comedy in Greece and Rome	(3)

CLASSICS IN GENERAL

480	The Classical Tradition in Manuscript and Printed Book	(3)
509	Roman Law	(3)

530	The Teaching of Latin	(3)
580	Independent work in Classics	(3)
600	Bibliography of Classical Scholarship	(3)
605	Comparative Greek and Latin Grammar	(3)
768	Residence Credit for the Master's Degree	(1-6)
790	Research in the Teaching of Classical Languages	(3)

Clinical Nutrition

Graduate Faculty: Professor Paul Thornton (Director of Graduate Studies).

The Master's Degree Program in Clinical Nutrition provides an opportunity for graduate study in the fundamentals of clinical nutrition. Plan B is offered. The curriculum is designed specifically to provide practical experience in nutrition in the treatment of illness and the maintenance of health and to deepen the student's foundation in the sciences fundamental to nutrition. It is intended primarily for those who wish to undertake careers in dietetics and clinical nutrition in university hospitals, large community hospitals, and medical centers; for those who intend to teach in the field of clinical dietetics; and for those who plan careers as members of a research team in clinical nutrition and metabolism.

The program is interdisciplinary in nature. The faculty is drawn from the basic sciences as well as the clinical departments—medicine, pediatrics, community medicine. The University Hospital and its related clinical facilities will be used for clinical instruction.

A minimum of 30 credit hours will be required to complete the degree. No language is required.

I. Required Courses

	Crs	Sem
CNU 601 Clinical Nutrition	4	I
CNU 602 Current Trends in Nutrition	1	II
CNU 701 Advanced Clinical Nutrition	2	I
CNU 702 Advanced Clinical Nutrition	2	II
CNU 780, 781, 782 Independent Study	1 ea.	I, II, S
	Total	12

II. Suggested courses to complete the 30-hours' credit. (In consultation with the program director or adviser the student will select certain of the courses listed.)

BCH 401 Fundamentals of Biochemistry	3	I
CNU 502 Principles of Human Physiology, same as PGY 810	5	II

or	
CNU 504 Principles of Human Physiology Lectures	4 11
ASC 534 Chemistry of Animal Products	4
BSC 772 Topical Seminar in Medical Behavioral Science	1-3 II
Electives sufficient to complete 30 credits as required	
502 Principles of Human Physiology	(5)
504 Principles of Human Physiology Lectures	(4)
601 Principle of Nutrition in Population Groups	(2)
602 Current Trends in Nutrition	(1)
701 Advanced Clinical Nutrition	(2)
702 Advanced Clinical Nutrition	(2)
780 Independent Study	(1)
781 Independent Study	(1)
782 Independent Study	(1)

Clinical Pastoral Counseling

Students wishing to pursue graduate studies through the Department are referred to the Department of Educational Psychology and Counseling, College of Education. Completion of Masters level work in a counseling program is required of those seeking certification as a Fellow of the American Association of Pastoral Counselors. Students wishing further information are invited to consult the Department Chairman.

501 Perspectives in Religion and Health (3)

Communication

Graduate Faculty: Professors Robert Bostrom, Lewis Donohew, Ronald Farrar, Robert Murphy (Director of Graduate Studies), Joseph Ripley, Ramona Rush (Dean), Bruce Westley, Associate Professors John Baseheart (Chairman), Norman Van Tubergen.

Associate Members: Associate Professor Leonard Tip-ton, Assistant Professor Phillip Palmgreen.

The faculties of the departments of Communication and the School of Journalism offer a program leading to the Master of Arts degree. Emphasis of the program is on the study of communication behavior. It includes study of the cognitive system and other components of an individual's communication system, interpersonal communication in small groups, and communication at the mass or social system level. The program is designed to serve the needs of students whose goals may include teaching and academic research, professional research, or professional work in the mass media. Students with no previous work in a communication area may be required to take from five to 10 hours of undergraduate work without graduate credit.

All students will be required to take nine core hours consisting of Proseminar in Communication (COM 601), Communication Theory (COM 651), and Communication Research Methods (COM 665), plus Statistics 670 or its equivalent as determined by the Director of Graduate Studies. A total of 30 hours of graduate level course credit is required, plus a research submission or thesis. The research submission may follow one of four tracks:

1. Academic Research (Pre-Ph.D.)—Thesis
2. Professional Research—Thesis or research report
3. Professional management or message preparation—Thesis or position paper
4. Academic teaching below university level—Thesis or summary and evaluation of research on a given topic

Additionally, it is required that a minimum of 18 hours of the total 30 must be at the 600 level or above.

Students may elect, with approval of their adviser, to work under any one of the four tracks listed above. After completion of the core courses students have 18 elective hours which they may take inside or outside the Department of Communication.

All students will be required to take a written comprehensive examination upon or near completion of the four core courses, and before being examined on the thesis/research submission.

Near the end of their last semester, students will take an oral comprehensive examination covering their thesis/research submission.

Courses in Communication which are available for graduate credit include:

COMMUNICATION

550 Introduction to Communications Research	(3)
551 The Communications Process	(3)
553 Mass Communication and Social Issues	(3)
554 Seminar in Communications	(2)
581 Communication Processes in Small Groups	(3)
582 Persuasion	(3)
601 Proseminar in Communication	(3)
605 Introduction to Information Science	(3)
607 Evaluating and Communicating Information	(3)
608 Mass Communications and Society	(3)
614 Information Storage and Retrieval Systems	(3)
615 Information Systems Design	(3)
650 Signs and Sign Behavior	(3)
651 Communications Theory	(3)
665 Communications Research Methods	(3)
705 Seminar: Information Sciences	(3)
721 Seminar in Intrapersonal Communication	(3)
730 Seminar in Mass Media and Public Policy	(2)
731 Seminar in Interpersonal Communication	(3)
741 Seminar in Multi-Actional Communication	(3)

768 Residence Credit for the Master's Degree	(1-6)
781 Directed Study in Communication	(1-6)

Courses in related program areas, such as journalism, speech, or telecommunication, may be drawn upon as appropriate, depending upon the student's emphasis as worked out with the adviser. Courses in the above areas are:

JOURNALISM

501 News Reporting	(3)
503 Copyreading and Editing	(3)
507 Feature Writing	(3)
509 Magazine Article Writing	(3)
511 Editorial Writing	(2)
513 Supervision of High School Publications	(1-3)
531 Law of the Press	(3)
535 History of Journalism	(3)
537 Seminar in Public Opinion	(3)
539 Reporting Public Affairs	(3)
541 Public Relations	(3)
561 Newspaper and Magazine Advertising	(3)
563 Advertising Procedures	(3)
575 Typography	(2)
599 Advanced Writing for the Mass Media	(3)

SPEECH

488 Interpretations of Poetry	(3)
500 Speech Analysis and Perception	(3)
583 Studies in Argumentation	(3)
584 Teaching of Speech	(3)
585 American Public Address to 1865	(3)
586 American Public Address since 1865	(3)
588 Oral Interpretation of Drama	(3)
589 Direction of Forensic Activities	(3)
687 Studies in Ancient and Medieval Rhetoric	(3)
688 Studies in Renaissance and Modern Rhetoric	(3)
780 Directed Studies	(3)
782 Special Topics in Speech	(3)

TELECOMMUNICATION

432 Film Production	(2)
500 Telecommunications Audience Analysis	(3)
501 Telecommunications Regulations	(3)
504 Telesystems	(3)
505 Telecommunications Program Policies	(2)
507 The Public Affairs Program	(2)
510 Broadcast Advertising	(3)
511 Telecommunications Instructional Systems	(3)
512 Teletectonics	(3)
530 Pro-Seminar in Radio and Television	(2)
599 Telecommunications Topical Seminar	(2)

Community Health

Graduate Faculty: Professor Joe Fred Sills (Chairman)

The Master of Science in Public Health has been discontinued. Persons interested in graduate education in Community Health should contact the Department directly.

420 Current Issues in Community Health Education	(3)
481 Community Health Practice	(4-8)
500 Public Health Sanitation	(3)

501	Public Health	(3)
511	Independent Study in Community Health	(1-3)
515	Communicable Diseases	(3)

Computer Science

Graduate Faculty: Professors Thaddeus B. Curtz (Chairman), A. C. R. Newbery (Director of Graduate Studies), Henry Thacher, Jr. Associate Professors Ronald Alter, Frank Brown, Johnson M. Hart, Michael C. McCord, Garth Olde.

Associate Members: Assistant Professors Anthony Baxter, Chung Wang.

The Department of Computer Science grants the M.S. degree.

In order to be admitted, candidates who meet the University requirements must present the calculus and the knowledge of a higher level programming language such as FORTRAN, COBOL, PL/I or ALGOL. In addition, to enter the program without being required to take additional undergraduate training, the candidate is expected to have completed four of the following at the undergraduate level:

An assembly language programming course.
A course in discrete mathematics or data structures.

A course in linear algebra.
A course in logic or logical design.
A course in numerical analysis.
A course in probability or statistics.

Students who enter the program having undergraduate credit for fewer than four of the listed items will be required to take appropriate steps to establish competence in a minimum of four.

The Master's degree is offered under both Plans A and B. However, generally the Department encourages the use of Plan A. Students are required to establish competence in one modern foreign language and to complete at least two-thirds of their course work in approved courses within the Department which must include the CS Problem Seminar.

An oral and written comprehensive examination is required of all candidates.

415	Graph Theory	(3)
416	Principles of Operations Research I	(3)
420	Algorithmic Languages and Compilers	(3)
421	Elementary Numerical Analysis I	(3)
445	Computing and the Humanities	(3)
472	Seminar	(2)
482	Discrete Methods and Models in Applied Mathematics	(3)
502	Use and Management of Mini-Computers	(3)
505	Data Base Management Systems	(3)
510	Discrete Computer Mathematics I	(3)
515	Study of Computer Arithmetic	(3)

520	Fundamentals of Programming Languages	(3)
525	Analog and Hybrid Computer Techniques	(3)
530	Computational Methods	(3)
532	Finite Precision Arithmetic	(3)
538	Elementary Numerical Analysis II	(3)
540	Systems Simulation	(3)
541	Advanced Compiler Design I	(3)
550	Introduction to Coding Theory	(3)
560	Non-Numerical Applications of Computers	(3)
562	Numerical Linear Algebra	(3)
570	Computers and Programming Systems	(3)
575	Formal Language Theory	(3)
585	Intermediate Topics in Computer Science	(3)
605	Advanced Information Processing	(3)
611	Discrete Computer Mathematics II	(3)
612	Independent Work in Computer Science	(1-3)
620	Numerical Approximation and Curve-Fitting	(3)
630	Numerical Evaluation of Transcendental Functions	(3)
631	Error Analysis and Certification	(3)
641	Advanced Compiler Design II	(3)
650	Problem Seminar	(3)
670	Natural Language Processing	(3)
680	Seminar in Computer Science	(2)
682	Switching Theory	(3)
683	Automata Theory	(3)
685	Special Topics in Computer Science	(3)
687	Special Topics in Software	(3)
689	Special Topics in Numerical Computing	(3)
690	Advanced Programming Systems I	(3)
691	Advanced Programming Systems II	(3)
768	Residence Credit for Master's Degree	(1-6)

Crop Science

Graduate Faculty: Professors R. C. Buckner, G. B. Collins, (Director of Graduate Studies), D. L. Davis, V. C. Finkner, A. J. Hiatt, M. J. Kasperbauer, P. D. Legg, G. W. Schneider, N. L. Taylor, T. H. Taylor. Associate Professors P. L. Cornelius, D. B. Egli, D. Knavel, C. G. Poneleit, C. Rieck.

Associate Members: Professor J. H. Smiley (Extension). Associate Professors M. J. Bitzer, A. J. Powell Jr., (Extension), D. M. Tekrony. Assistant Professors R. M. Hayes, D. A. Reicosky, Wayne Vian.

The Crop Science graduate program offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees with options in plant breeding and genetics, crop ecology and management, turf management, crop physiology, seed technology and weed science. For the M.S. degree, 24 hours of course work plus an acceptable thesis are required (Plan A). In certain exceptional cases, the thesis may be replaced by six additional hours of course work. Work leading to advanced degrees must conform to the general rules and regulations of The Graduate School. A reading knowledge of one foreign language is required for the Ph.D. degree.

Individual programs are developed to include a strong course work component

and a meaningful research experience. A strong undergraduate background in the agricultural and biological sciences is required of all degree candidates.

401	Agri-chemicals in Pest management	(3)
404	Weed Science	(3)
406	Plant Breeding	(3)
408	Tobacco	(3)
412	Grain Crops	(3)
502	Ecology of Economic Plants	(3)
510	Ecology and Utilization of Grassland	(4)
515	Turf Management	(3)
554	Advanced Crop Science	(3)
556	Seed Technology	(3)
560	Soil-Plant Relationships	(3)
599	Special Problems in Agronomy	(1-4)
620	Genetic Structure of Populations	(3)
630	Experimental Techniques in Plant Physiology	(3)
658	Advanced Weed Science	(3)
666	Advanced Plant Breeding	(3)
678	Statistical Genetics	(3)
697	Special Topics in Crop Science	(1-3)
730	Grassland Research	(3)
732	Mineral Nutrition of Plants	(3)
734	Physiology of Growth and Development	(3)
736	Phylogeny of Cultivated Plants	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Agronomy Seminar	(1)
799	Research in Agronomy	(1-4)

Curriculum and Instruction

Graduate Faculty: Professors Ronald Atwood (Director of Graduate Studies), Harry Barnard, George Denmark, James Moore, Theodore Mueller. Associate Professors Virginia Atwood, Lowell Eberwein, Phil Nacke, William Peters, (Chairman), Leland Smith, Kathy Thornburg.

Associate Members: Associate Professors Frank Colton, Assistant Professors Bruce Petty, Truman Stevens, Argene Wilson.

The Department of Curriculum and Instruction offers a wide range of graduate programs leading to the Master of Arts in Education, Master of Science in Education (Plan A or Plan B available). Specialist in Education, and Doctor of Education degrees. These programs are designed to prepare specialists for a variety of roles in curriculum and instruction including teaching, supervising, and coordinating subject matter areas at the elementary, junior high, senior high, and junior college level. The specialist and doctoral programs prepare leaders for both public schools and institutions of higher learning. Graduate specialization is available in a wide range of academic subject matter fields as well as educational media and technology and reading.

MASTER OF ARTS IN EDUCATION

(ELEMENTARY EDUCATION OPTION)

For a Master of Arts in Education, a minimum of 12 semester hours of graduate work shall be selected from at least three of the following areas of professional education in accordance with the needs of the individual teacher. This program qualifies teachers for a Standard Certificate if they have completed the four-year undergraduate curriculum. The specific courses listed below under each area shall be used to meet the requirements:

Area I. Research Methodology

EDP 522, EDP 656, and EDP 657.

Area II. The Psychology of Learning

EDP 548, EDP 610, EDP 611, and EDP 658.

Area III. Foundations in Education

EDF 640, EDF 645, EDF 650, EDF 651, EDF 652, EDF 655, EDF 661 and EDF 665.

Area IV. A seminar in Instruction Devoted to the Method and Materials of Teaching. A general or specific course in methods and materials may be taken to meet this requirement.

Area V. A General Study of Curriculum Development.

EDC 712, and EDC 732.

Area VI. Advanced Study in Human Growth and Development.

EDP 600, EDP 601, and EDP 759.

Area VII. Advanced Study in Reading (required unless waived on basis of previous advanced study in reading)

EDC 540, EDC 619, EDC 620, EDC 641, and EDC 642.

Other course requirements, including 12 semester hours outside of education, are met through courses chosen with the adviser's approval.

MASTER OF ARTS IN EDUCATION

(SECONDARY EDUCATION OPTION)

For a Master of Arts in Education, a minimum of 12 semester hours of graduate work shall be selected from at least three of the following areas of professional education in accordance with the needs of the individual teacher. This program qualifies teachers for a Standard Certificate if they have completed the four-year undergraduate curriculum.

Area I. Research and Methodology*

EDP 522, EDP 656, and EDP 657.

Area II. The Psychology of Learning**

EDP 548, EDP 610, EDP 611, and EDP 658.

Area III. Foundations in Education*

EDF 640, EDF 645, EDF 650 EDF 651, EDF 652, EDF 655, EDF 661 and EDF 665.

Area IV. A Seminar in Instruction Devoted to Methods and Materials of Teaching*

A general or specific methods and materials course may be taken to meet this requirement.

Area V. A General Study of Curriculum Development

EDC 714,* EDC 717, EDC 732,* and EDC 735.

Area VI. Advanced Study in Human Growth and Development**

EDP 600, EDP 601, and EDP 759.

Area VII. Advanced Study in Reading

EDC 540, EDC 643, EDC, 646, EDC 619, and EDC 620.

Other course work including 12 semester hours outside of education, is chosen with the adviser's approval.

*If a student's ultimate career objectives are in the areas of Administration and Supervision, a course from each of these areas is recommended.

**At least one course from either Area II or Area VI, or an equivalent course outside Education, is required for Administration and Supervision Programs.

MASTER OF SCIENCE IN EDUCATION

(SECONDARY EDUCATION OPTION)

The general requirements for the Master of Science in Education, secondary education option, are the same as those for the Master of Arts in Education. However, the Master of Science in Education may be granted only to those students whose work outside the College of Education includes at least 12 semester hours in mathematics and/or science.

MASTER OF SCIENCE IN EDUCATION

(CLINICAL AND COLLEGE TEACHING OPTION)

The clinical and college teaching option is a 36-semester hour program designed for individuals who are not seeking certification but wish to develop their instructional knowledge and skills in order to maximize the acquisition of knowledge and competencies of students outside K-12 school settings. Persons choosing this option are frequently preparing for instructional responsibilities in health-related clinical situations or junior colleges.

Nine of the 18 hours required in education must be taken in the Department of Curriculum and Instruction. At least 12 hours must be taken outside the College of Education. Specific programs are planned with the approval of the Director of Graduate Studies.

MASTER OF ARTS EDUCATION (READING)

Requirements for a Master of Arts in Education with reading as a field of concentration must meet the specifications for a Master of Arts in Education (Plan B). The requirements must also be in conformity with the general requirements for the Master of Arts in Education (Elementary), or the Master of Arts in Education (Secondary).

In addition to the previously mentioned requirements, a graduate student in elementary or secondary education who wishes to specialize in the area of reading instruction must meet the Kentucky certification guidelines for endorsement as a "reading specialist." This endorsement will be added to a classroom teaching certificate upon completion of a master's degree program with emphasis in reading which follows a specified period of preparation. The guidelines for this endorsement are as follows:

1. The prerequisites shall include:
 - a. A teaching certificate based upon the completion of a four-year program of preparation.
 - b. The completion of an approved master's degree program with emphasis in reading following the curriculum guidelines.
 - c. A minimum of three years of successful classroom teaching; however, one year of equivalent work which includes clinical experience may be substituted for one year of classroom teaching.
2. The endorsement for reading specialists shall be valid for the same teaching level as the basic teaching certificate which is endorsed.
3. The curriculum shall include an emphasis in reading and a minimum of 30 semester hours preparation according to the following distribution:
 - a. A minimum of 12 semester hours credit in graduate level reading courses to include EDC 619, EDC 620, EDC 641 or EDC 643 and an additional reading course at the 600 or 700 level.
 - b. A minimum of six semester hours credit in education courses selected from the alternatives specified under two different areas (I through VI) as listed in the requirements for the Master of Arts in Education. (Elementary), or the Master of Arts in Education, (Secondary).
 - c. A minimum of 12 semester hours

credit in courses (400 level or above) outside the College of Education. These courses must be taken from the following areas:

- | | | | | | |
|-----|--|--------|-----|---|--------|
| 411 | Student Teaching in Early Childhood Education | (12) | 643 | Research and Theory in Teaching Reading in Secondary Schools | (3) |
| 500 | Clinical and Laboratory Teaching | (4) | 646 | Organizing Reading Programs | (3) |
| 501 | Teaching Internship | (3-12) | 650 | A Study of Research and Theory in Teaching the Disadvantaged | (3) |
| 511 | Special Topics in Early Childhood Education | (1-3) | 661 | Effective Curriculum Strategies | (3) |
| 521 | Materials and Methods in Teaching Mathematics in Secondary School | (3) | 662 | Integrating Learning Experiences in Early Childhood Education | (2) |
| 522 | Materials and Methods in Teaching Social Studies in the Secondary School | (3) | 670 | Advanced Study in the Teaching of Elementary School Mathematics | (3) |
| 524 | Materials and Methods for Teaching Science in the Secondary School | (3) | 680 | Internship in Teacher Education | (6) |
| 525 | Materials and Methods of Teaching English in the Secondary School | (3) | 712 | The Elementary School | (3) |
| 533 | Teaching Reading in the Secondary School | (3) | 713 | Curriculum Trends in Early Childhood Education | (3) |
| 534 | Reading and Study Skills in English | (3) | 714 | The Secondary School | (3) |
| 538 | Advanced Arts and Crafts in the Elementary School | (3) | 717 | The Junior High School | (3) |
| 539 | The Elementary Curriculum | (3) | 724 | Organization and Supervision of Student Teaching | (3) |
| 540 | Problems in Teaching Reading | (3) | 730 | Problems of the School Curriculum | (3) |
| 542 | Children's Literature | (3) | 732 | Principles of Curriculum Construction | (3) |
| 543 | Teaching in the Kindergarten | (3) | 735 | The Core Program in the Secondary Schools | (3) |
| 544 | Utilization of Educational Media | (3) | 740 | Practicum in Teaching Reading and Related Language Arts | (3) |
| 545 | Preparation of Instructional Materials | (3) | 745 | Administration of Educational Media Programs | (3) |
| 546 | Introduction to Early Childhood Education | (3) | 746 | Motion Pictures in Education | (3) |
| 549 | Sociological Aspects of Mass Communication | (3) | 747 | Seminar in Reading | (3) |
| 550 | Teaching the Culturally Different | (3) | 748 | Psychology of Reading | (3) |
| 552 | Modern Educational Problems | (3) | 750 | Administration and Supervision of Public School Music | (3) |
| 562 | Modern Educational Problems | (3) | 751 | History and Philosophy of Music Education | (3) |
| 563 | Modern Educational Problems (General Elementary Curriculum) | (3) | 757 | College and Adult Reading | (3) |
| 564 | Modern Educational Problems (General Secondary Curriculum) | (3) | 768 | Residence Credit for the Master's Degree | (1-6) |
| 565 | Modern Educational Problems (General Curriculum) | (3) | 769 | Residence Credit for the Doctor's Degree | (0-12) |
| 572 | Modern Educational Problems (Vocational Education) | (3) | 777 | Seminar in Curriculum and Instruction (Subtitle Required) | (1-3) |
| 575 | Modern Educational Problems (Unclassified) | (3) | 780 | Independent Work in Elementary Education | (2) |
| 576 | Modern Educational Problems (Unclassified) | (3) | 781 | Independent Work in Secondary Education | (3) |
| 596 | Science in the Elementary School | (3) | 790 | Research Problems in Secondary Education | (3) |
| 600 | Workshop in Reading | (1-3) | 791 | Research Problems in Elementary Education | (3) |
| 606 | Instructional Television in the Classroom | (3) | | | |
| 607 | Basic Instructional Design | (1-3) | | | |
| 608 | Applications of Instructional Design | (3) | | | |
| 619 | Diagnosis of Reading Disabilities | (3) | | | |
| 620 | Reading Remediation | (3) | | | |
| 641 | Research and Theory in Teaching Reading in the Elementary School | (3) | | | |
| 642 | Research and Theory in Teaching Language Arts in the Elementary School | (3) | | | |

Dentistry

Graduate Faculty: Professors Emmit Costich, Raymond Kopczyk, Harold Laswell, James Little, Stanley Saxe (Director of Graduate Studies), Associate Professors Robert Biggerstaff (Chairman, Department of Orthodontics), Albert T. Brown.

Associate Members: Professors Roland Duell, Thomas Mullaney, Associate Professors Jan Kraal, Thomas Lillich, Patrick Sammons, Richard Wynn, Assistant Professors Raymond Bridges and Orhan Tuncay.

The program leading to the Master of Science in Dentistry degree is designed to provide the graduate dentist with clinical proficiency in a specialty area, research experience in a basic biological discipline, and exposure to the fundamentals of teaching in the field of dentistry. At the present time, students pursuing specialty training in the area of orthodontics are

eligible for the Master of Science in Dentistry.

Only dental graduates of high academic standing will be accepted into this program, which requires two years of clinical training, integrated with additional basic science and research experience. The first year is largely devoted to clinical training, lectures and seminars. The second and later years will be a continuation of clinical training, with a high proportion of time devoted to basic science studies, research, and dental teaching techniques.

The program is interdisciplinary in scope and is taught by systems rather than the classic strict subject approach. The participating faculty is from all the clinical departments of the College of Dentistry, from the Medical Center departments of anatomy, pediatrics, psychiatry and behavioral science, and from the University Hospital.

Specific requirements for the Master of Science in Dentistry degree are: (1) satisfactory completion of the clinical certificate program; (2) 30 hours graduate credit, at least half of which must be basic science (non-clinical) courses; (3) submission of an acceptable thesis based on an individual research project (Plan A) and (4) passage of a comprehensive oral examination and thesis defense. Foreign language credit is not required.

- | | | |
|---------|---|-------|
| ORT 610 | Cranio-Facial Form | (3) |
| ORT 620 | Oral-Pharyngeal Function, Part I | (2) |
| ORT 621 | Oral-Pharyngeal Function, Part II | (2) |
| ORT 660 | Orthodontic Seminar-Clinic | (2) |
| ORT 661 | Orthodontic Seminar-Clinic | (3) |
| ORT 700 | Orthodontic Seminar | (1) |
| ORT 710 | Management of Complex Orofacial Deformities | (1) |
| ORT 750 | Research in Orthodontics | (1-5) |
| ORT 768 | Residence Credit for the Master's Degree | (1-6) |
| CDS 550 | Research Methodology and Instrumentation | (2) |
| CDS 611 | Child Growth and Development, Part I | (2) |
| CDS 612 | Child Growth and Development, Part II | (1) |
| CDS 631 | Principle of Dental Occlusion | (2) |
| CDS 655 | Practice Environment and Practice Management | (1) |
| ODM 610 | Developments in Oral Medicine | (2) |
| OBI 650 | Oral Biology for Postdoctoral Dental Students | (4) |
| OPT 651 | Graduate Oral Pathology | (3) |
| OSC 651 | Anatomical Relationships in Surgery | (1) |
| PER 661 | Modern Concepts in Periodontics | (2) |
| PDO 631 | Dental Care for the Chronically Ill and Handicapped Child | (2) |
| END 600 | Basic Endodontic Theory | (2) |
| END 610 | Clinical Endodontics | (2) |
| END 620 | Endodontic Research | (2) |
| END 630 | Endodontic Seminar | (2) |

Diplomacy and International Commerce

Director of the Patterson School: Vincent Davis

The Patterson School of Diplomacy and International Commerce offers an interdisciplinary master's degree and serves in an advisory capacity with respect to the Ph.D. programs in international studies within the four departments primarily related to the Patterson School. The primary departments are Business Administration, Economics, History and Political Science.

The M.A. degree program can be tailored with considerable flexibility to meet the career needs of any particular student. Plan A and Plan B are available. This program is especially useful for the student desiring a career in any of the non-academic fields in foreign affairs, such as international banking, international business, international journalism (foreign correspondent), or service with governmental agencies (such as the U.S. Department of State) or international organizations (such as the United Nations) in foreign affairs.

At least half of the 30 minimum hours for the M.A. degree must ordinarily be in one of the four primary departments. Each student is expected, in the absence of special circumstances, to take a methodology course in the major field of concentration (such as Business Administration 636, Economics 660 or 661 or 662, History 606, or Political Science 671, depending in part on past training). Most students can expect to complete the 30 minimum hours for the M.A. degree in one full school year (12 hours in each of two semesters) plus a summer session, or plus the following (third) semester if more than the 30 minimum hours are desired.

To assure the interdisciplinary character of the degree, the M.A. candidate is expected to take 12 to 15 hours distributed in at least two departments outside the major departmental concentration. Courses acceptable to the program include those dealing with interstate and cultural relations, foreign policy, and national and regional development processes. Enough flexibility is allowed so that a student may concentrate the work in a specific geographical area such as Latin America, Asia, Europe, etc., or prepare more broadly in certain topical or functional aspects of international affairs.

The student must pass a written exam-

ination covering work in three subfields of study, with these subfields to be defined for any particular student and in consultation with the student by the Patterson School Director of Graduate Studies.

The Patterson School M.A. candidate must meet the basic Graduate School requirement for a reading knowledge of a modern foreign language, except that the candidate may request that the Director of the Patterson School, in consultation with other appropriate faculty members, allow the substitution of another research skill (such as statistics, other methodologies or relevant techniques) in lieu of the language requirement, with adequate competence to be determined by procedures established by the Director.

Students planning to continue their studies beyond the M.A. may apply for admission to one of the appropriate Ph.D. programs at the University of Kentucky (or elsewhere). If at the University of Kentucky, the most likely departmental doctoral programs include those in Political Science, History, International Economics and Economic Development, and International Business and Commerce. These doctoral programs are fully described under the appropriate headings elsewhere in this Bulletin. However, since the doctoral programs have their own varying requirements, it is to be expected that in many cases the Patterson School's interdisciplinary M.A. will require that the student take longer to complete the course work for the Ph.D. than if enrollment had been directly in one of the departmental doctoral programs upon entering Graduate School. The additional work required is likely to be heaviest with respect to business administration, where the first year of graduate study is largely prescribed, and in economics, where certain methodology and service courses need to be completed in the program. In all instances the extra time required will also depend on the nature of a student's undergraduate preparation.

A number of non-service Patterson School Fellowships are available from the income from the bequest of James K. Patterson, the first President of the University.

Application forms for admission and for fellowship assistant should be requested from the Dean of The Graduate School and returned to the Dean of The Graduate School.

It is useful if advance carbon copies or photocopies of all such application materi-

als can be sent directly to the Director of the Patterson School (Patterson Office Tower, University of Kentucky). The Director of the Patterson School strongly encourages all applicants to take the Graduate Record Examination (Verbal and Quantitative, plus the Advanced Examination in the major undergraduate field) in time for the GRE scores to be submitted as part of the application procedures. In addition, each applicant is required to submit a brief statement (two or three pages, at most) explaining the special interest in the Patterson School program in terms of career goals. Each applicant is also requested to have three academic letters of reference to be mailed directly to the Director of the Patterson School.

768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
777	Research Problems in International Relations	(3)
795	Special Problems in Diplomacy and International Commerce	(3)

Economics

MASTER OF SCIENCE

Graduate Faculty: Professors M. M. Ali, Carl Cabe, Virgil Christian, Stuart Greenbaum, H. W. Hargreaves, Charles F. Haywood, Charles Hultman, Joseph Krislov, Randolph McGee, David Richardson (Chairman and Director of Graduate Studies), Rubin Sapasnik, Hirofumi Shibata, Don Soule, William Stober, Robert Stroup. Associate Professors Stuart Burness, Richard Gift, Merlin Hackbart, Curtis Harvey, John Madden, James Marsden, Brian Motley, David Ross.

Associate Members: Assistant Professors Jeffrey Levin and Gregory Richardson.

The M.S. in economics is primarily for students who wish to have a large amount of flexibility in a program of advanced study in economics. This degree program provides minimal preparation for employment as an undergraduate teacher of economics and as a researcher for government, business, and other organizations. The program can be structured to prepare a student for further graduate work in economics, but it is also highly suitable for students with strong interdisciplinary interests. The program can be structured to prepare a student for further graduate work in economics and related fields. Plan B is offered.

Recommended minimal undergraduate preparation: six hours of intermediate theory, six hours of statistics, and six hours of

calculus. These can be taken in the program as additional work.

Requirements for the M.S. in economics are:

1. A minimum of 30 hours of graduate credit courses.
 - a. Fifteen hours must be in courses in the Department of Economics, and 12 of these hours must be in courses reserved exclusively for graduate students.
 - b. At least 15 hours of the total of 30 must be in courses reserved exclusively for graduate students.
 - c. The 30 hours must include ECO 660 or ECO 760 and 661, Economics Theory.
2. Success in a final examination.
3. Minimal average of grade B in all courses attempted for graduate credit after being admitted to Graduate School. Students obtaining two grades of C below a B average will be dropped by the Department.

MASTER OF ARTS

The program for the M.A. in economics is the first stage of the Ph.D. program. However, this program also provides minimal preparation for employment in undergraduate college teaching and as a researcher for government, business, and other organizations. The program is designed to develop basic foundations in (1) economics theory, (2) quantitative techniques, (3) three areas of specialization within economics, and (4) research and writing skills. Plan B is offered.

The recommended minimal undergraduate preparation—six hours of intermediate theory, six hours of statistics, and six hours of calculus.

Requirements

1. A minimum of 30 hours of graduate credit courses.
 - a. At least 24 of the 30 hours must be in courses reserved exclusively for graduate students.
 - b. ECO 590, Introduction to Quantitative Economics I (or its equivalent), ECO 760 and 661, Economic Theory.
 - c. One of the basic courses (600 or 700 level) in each of three of the elective fields from the Ph.D. program
2. Successful examination in one modern foreign language or competence in mathematical sciences, evidenced by nine hours of approved course

work, six hours of which must be in statistics courses numbered 400 or higher.

3. Success in a final examination.
4. Minimal average of grade B in all courses attempted for graduate credit after being admitted to Graduate School. Students obtaining two grades of C below a B average will be dropped by the Department.

THE PH.D. DEGREE

The Ph.D. program is designed to enable the graduate to contribute to the advancement of economics. The program is also aimed at producing graduates who are qualified to teach, as well as engage in industrial and governmental research and consulting.

To attain these objectives, the program is designed to provide the student with the appropriate knowledge, understanding, skills and abilities, including:

1. An understanding of economic theory.
2. Skill in the use of quantitative techniques, specifically mathematics and statistics.
3. Specialization in a limited number of areas.
4. A knowledge of the broad social and political background of the economic environment.
5. Experience in the development of research projects throughout their entire program.
6. Research and writing skills that would lead to the publication of original research.
7. Competence in communicating economic knowledge to broad and diverse audiences. Recommended minimal undergraduate preparation: six hours of intermediate economic theory, six hours of statistics, and six hours of calculus.

Requirements

Work for the degree of Doctor of Philosophy in economics must conform to the general requirements of The Graduate School. Although there is no specific course work required in the Ph.D., the student must develop a depth of understanding in the following areas and the equivalent of the material in the following courses:

1. Economic Theory
 - ECO 590 Introduction to Quantitative Economics I
 - ECO 760 Neoclassical Economic Theory
 - ECO 661 Advanced Macroeconomic Theory
 - ECO 762 General Equilibrium Analysis and Welfare Economics
 - ECO 761 Seminar in Macroeconomic Theory
2. The Elective Requirement: All Ph.D. students must complete three fields, at least two of which are in economics. With the approval of the Director of Graduate Studies, one of the three fields may be taken in a related discipline. A sequence of two courses covers the minimum material necessary for each field.
 - ECO 671 and 771 International Economics
 - ECO 673 and 773 Economic Development
 - ECO 676 and 776 Labor Economics
 - ECO 679 and 779 Public Finance
 - ECO 682 and 683 Regional Economics
 - ECO 686 and 786 Monetary Economics
 - ECO 688 and 788 Economic Theory
 - ECO 792 and 793 Econometrics
 - ECO 665, 666, and 669 Economic Thought and History
 - ECO 697 and 795 Comparative Economic Systems
3. Supporting Work: At least six hours of supporting course work must be selected. These courses of study must be approved by the student's Special Committee.
4. Competence in mathematical sciences, evidenced by nine hours of approved course work, six hours of which must be in statistics courses numbered 400 or higher.
5. Successful examination in one modern foreign language.
6. Minimal average of grade B in all courses attempted for graduate credit after being admitted to Graduate School. Students obtaining two grades of C below a B average will be dropped by the Department.
7. Qualifying Examinations
 - a. Written Examinations: Written examinations must be taken in each of the three elective fields after a departmental written examination in Economic Theory has been passed. All of these examinations are given three times a year.
 - b. Oral Examination for Candidacy: After passing the above written examinations, the student will have an oral examination on the areas of specialization.
8. The Dissertation: The dissertation will be based on original research on a

significant topic. The dissertation will be defended in an oral examination.

460	Managerial Economics	(3)
461	Market Structure and Anti-Trust Policy	(3)
462	Seminar in Economic Theory	(3)
463	Analysis of Business Conditions	(3)
464	Economics of Regulated Industries	(3)
465	Comparative Economic Systems	(3)
466	Seminar in Comparative Systems	(3)
467	Economic History of the United States and Western Europe: an Economists' View	(3)
468	Seminar in Economic History	(3)
469	History of Economic Thought	(3)
471	International Economics	(3)
472	Seminar in International Economics	(3)
473	Economic Development	(3)
474	Seminar in Economic Development	(3)
477	Labor Economics	(3)
478	Seminar in Labor Economics	(3)
479	Public Finance	(3)
480	Seminar in Public Finance	(3)
481	Collective Bargaining	(3)
483	Regional Economics	(3)
484	Seminar in Regional Economics	(3)
485	Monetary Economics	(3)
486	Seminar in Monetary Economics	(3)
487	Intermediate Macroeconomic Theory	(3)
488	Intermediate Microeconomic Theory	(3)
491	Survey Sampling Design	(3)
493	Social and Cultural Determinants of Economic Growth and Development	(3)
494	Economics of Energy Production and Distribution	(3)
590	Introduction to Quantitative Economics I	(3)
592	Introduction to Quantitative Economics II	(3)
595	Social Accounting	(3)
660	Advanced Microeconomic Theory	(3)
661	Advanced Macroeconomic Theory	(3)
662	Research Methods and Procedures in Economics	(3)
665	History of Economic Thought I	(3)
666	History of Economic Thought II	(3)
667	Seminar in Historical Studies in Economic Change	(3)
668	American Economic Change in Historical Perspective	(3)
670	Economics of International Financial Institutions	(3)
671	International Economics Seminar I	(3)
673	Seminar in Economic Development I	(3)
674	Agriculture and Economic Development	(3)
676	Labor Markets and Wage Determination	(3)
679	Seminar in Public Finance I	(3)
682	The Economics of Spatial Relations	(3)
683	Economics of Growth and Development in Regions and Urban Areas	(3)
686	Monetary Economics: Theory	(3)
687	Monetary Economics: Policy	(3)
688	Topics in Optimization	(3)
692	Econometric Methods	(3)
697	Theories of Comparative Economics Systems	(3)
760	Seminar in Microeconomic Theory	(3)
761	Seminar in Macroeconomic Theory	(3)
762	Welfare Economics	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	International Economics Seminar II	(3)
773	Seminar in Economic Development II	(3)

776	Economics of Trade Unionism and Labor Law	(3)
779	Seminar in Public Finance II	(3)
783	Seminar in Regional Economics	(3)
786	Seminar in Monetary Theory and Policy	(3)
788	Mathematical Economics-Macro Theory	(3)
791	Problems in Econometrics	(3)
792	Econometrics I	(3)
793	Econometrics II	(3)
795	Seminar in Comparative Economic Systems	(3)
796	Seminar	(1-6)
797	Research Problems in Economics	(1-6)

Educational Psychology and Counseling

Graduate Faculty: Professors James Barclay, Henry Cole, (Chairman) Gordon Liddle, Earl Rankin, Timothy Smith, Judith Worell. Associate Professors Dwight Auvenshine, William Bramble, Robert Harman (Adjunct), Emanuel Mason, William Stilwell (Director of Graduate Studies).

Associate Members: Associate Professor Raymond Wilkie. Assistant Professors Logan Green, Edward Kifer, Pamela Remer, Rory Remer.

The Department of Educational Psychology and Counseling offers programs leading to the following degrees: Master of Arts in Education, Master of Science in Education (Plans A and B available), the Specialist in Education (Ed.S.), the Doctor of Education (Ed.D.), and the Doctor of Philosophy (Ph.D.). Students must apply to both The Graduate School and to the Department. Doctoral applications must be completed by 1 February for summer/fall beginning. All other degree applications are considered shortly after 1 October and after 1 March.

Within the degree programs there are a number of specializations possible (e.g., counseling psychology, educational psychology and school psychology). Specializations are designed to provide students with both a background in behavioral and humanistic components of human learning and behavior, and competencies to practice the skills designated for these programs. Admission to candidacy in any of these programs not only includes demonstrated skills in the academic area, but a judgment by the faculty of the area program that the candidate possesses the personal and social characteristics requisite for providing the skills associated with the program and the advanced degree.

MASTER OF ARTS IN EDUCATION DEGREE (GUIDANCE AND COUNSELING)

Two options are open to candidates interested in this degree program. They are:

concentration in elementary guidance and counseling, and concentration in secondary guidance and counseling. The programs in elementary and secondary guidance and counseling are designed to prepare individuals with a teaching certificate for guidance and counseling functions in public schools.

Ordinarily, applicants for these programs will have a regular teaching certificate at the elementary or secondary level, and one year of teaching experience. Applicants lacking these qualifications who wish to obtain the degree and be certified for school work must complete the teacher education program, earn appropriate certification, and complete one year of teaching at the appropriate school level. The curriculum for these programs matches the State guidelines in the areas of elementary and secondary counseling. These programs provide learning experiences in each of the required competency areas. The Programs vary from 36 to 42 graduate hours in addition to six to nine hours of course prerequisites in introductory psychology, testing, and personality theory (a total of 42 hours).

MASTER OF ARTS IN EDUCATION DEGREE (SCHOOL PSYCHOLOGICAL DIAGNOSTICIAN)

This program is designed to prepare individuals to function at the first level of school psychology services. It meets the guidelines for the State Certificate as a School Psychometrist. The program consists of a varying amount of graduate and undergraduate work. It is variable because applicants can enter the program with two backgrounds: (1) a bachelor's degree in a teaching field and certification for that field, or (2) a bachelor's degree in psychology. In either case, the work of the school diagnostician requires a depth of background in psychology. Students with a background in psychology can expect to complete the graduate program in about 45 graduate hours of work. Students lacking a background in psychology should be prepared to complete additional course work. Completion of the program also requires a period of internship in school psychology work.

MASTER OF ARTS IN EDUCATION DEGREE (REHABILITATION COUNSELING)

This curriculum was designed in accor-

dance with guidelines provided by the national professional associations in rehabilitation counseling. Successful completion of the program fulfills the Kentucky certification requirements in rehabilitation counseling. It does not meet certification requirements for school counseling.

Required courses

- EDP 521 Introduction to Vocational Rehabilitation
EDP 641 Psychological Measuring Instruments or
EDP 653 Appraisal Procedures in Guidance Practice)
EDP 652 Counseling Theories
EDP 656 Methodology of Educational Research
EDP 657 Educational Statistics
EDP 661 Counseling Techniques
EDP 664 Psycho-social Aspects of Disability
EDP 665 Practicum in Counseling Psychology
EDP 666 Psychology of Career Counseling
EDP 708 Internship in Education Psychology and Counseling
PSY 535 Psychological Testing or
EDP 522 Educational Tests and Measurements or
EDP 659 Advanced Educational Measurement
SW 512 Medical Knowledge for Social Professions

Electives

These include nine hours outside education to be approved by adviser, generally to make up an area of personality, social, and abnormal psychology. If students already have an adequate background in those courses, they may choose from related courses such as sociology, social work, or anthropology.

MASTER OF SCIENCE IN EDUCATION DEGREE

The Master of Science in Education degree is offered by the Department for individuals who are not seeking a State certificate in counseling, psychometry or rehabilitation counseling, but wish to complete a professional sequence of courses leading to specific skills in educational psychology and/or counseling. Individuals who are interested in specializing in educational psychology, human development, measurement, research in education or non-public school counseling may obtain this degree. The program is flexible and tailored to individual needs. It is planned in consultation with an adviser. It consists of 30 hours of graduate work plus a thesis, or 36 hours of graduate work without a thesis, except for students who have taken several appropriate 500 level courses, in which case, the required number of hours may be reduced by not more than six hours. There is also a

60-hour program which includes a 42-unit masters of science in education, a full-time internship, and additional course work and leads to permission to sit for the State Certification Examination in Counseling Psychology.

DOCTOR OF EDUCATION DEGREE

The Doctor of Education degree is offered in the field of educational psychology and counseling. Programs in this department follow the general guidelines of the College of Education program as specified earlier. (See Graduate School section of Bulletin)

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. program is offered in the specialty areas of Counseling Psychology, Educational, Psychology and School Psychology under one Departmental program. A full time supervised one-year internship is required for all areas.

There are various concentrations possible within the Ph.D. program. Representative of these are: (1) learning, cognition, and curriculum design; (2) human development and social processes; (3) counseling psychology; (4) measurement, evaluation and research design; and (5) school psychology.

For further information on these programs or degrees contact the Director of Graduate Studies in the Department of Educational Psychology and Counseling. (See Graduate School section of Bulletin.)

- 518 Mental Hygiene (3)
519 The Elementary School Pupil (2)
520 The Secondary School Pupil (3)
521 Introduction to Vocational Rehabilitation (Counseling and Guidance) (3)
522 Educational Tests and Measurements . . . (3)
548 Educational Psychology (3)
600 Human Development and Behavior . . . (3)
601 Human Social Development (3)
603 Human Cognitive Development (3)
605 Introduction to Counseling (3)
610 Theories of Learning in Education (3)
611 Human Cognitive Learning (3)
640 Practice in Testing: Intelligence Tests . . (4)
641 Psychological Measuring Instruments . . . (3)
649 Group Counseling (3)
650 Diagnosis and Counseling in Counseling Psychology (3)
652 Theories of Counseling (3)
653 Appraisal Procedures in Guidance Practice (3)
656 Methodology of Educational Research . . (3)
657 Educational Statistics (3)
658 Problems in Educational Psychology . . . (1-3)
659 Advanced Educational Measurement . . . (3)

- 660 Research Design and Analysis in Education (3)
661 Techniques of Counseling (3)
664 Psycho-Social Aspects of Disability . . . (3)
665 Practicum in Counseling Psychology . . . (3-6)
666 Psychology of Career Counseling (3)
675 Practicum in School Psychology (5)
677 Advanced Studies in Community Mental Health (3)
680 Child Guidance and Parent Counseling . . (3)
683 Topics in Counseling Psychology (1-3)
690 Advanced Studies in Psychological Assessment (3-6)
701 Behavior Modification in Education . . . (3)
702 Career Development: Research, Theories and Practices (2-3)
707 Multivariate Analysis in Educational Research (3)
708 Internship in Educational Psychology and Counseling (3-9)
747 Seminar in Reading (3)
748 Psychology of Reading (3)
759 Identifying and Providing for Individual Student Needs (3)
762 Organization and Administration of Guidance Services (3)
763 Research and Evaluation in Guidance . . . (3)
765 Independent Work in Counseling Psychology (2)
768 Residence Credit for the Master's Degree (1-6)
769 Residence Credit for the Doctor's Degree (0-12)
777 Seminar in Counseling Psychology (1-3)
778 Seminar in Educational Psychology (3)
782 Independent Work in Educational Psychology (3)

Electrical Engineering

Graduate Faculty: Professors Eugene Bradley (Director of Graduate Studies), Earl Steele (Chairman), Prasad Kadaba, Syed Nasar, Associate Professors Frank M. Brown, Raymond Distler, Clayton R. Paul, Hsi-Han Yeh and Tatsuo Itoh.
Associate Members: Assistant Professor Lee Todd and L. Wilson Pearson.

The Department of Electrical Engineering offers programs leading to Master of Science in Electrical Engineering and Ph.D. degrees. Areas of current research interest include: energy conversion; modern control theory; digital engineering; circuit theory; switching theory; automatic control; solid-state electronics; quantum electronics, communications systems and electromagnetics. Both Plan A and B are offered.

The laboratories are well-equipped for research in the above areas under the direction of the electrical engineering faculty. For further information on financial aid and other details, write to the Department Chairman.

- 402 Electronic Instrumentation and Measurements (3)

403	Advanced Electrical Engineering Laboratory I	(2)
415	Electromechanics I	(3)
416	Electrical Engineering Laboratory III	(2)
420	Electrical Engineering Analysis I	(3)
461	Electronic Circuits I	(3)
462	Electrical Engineering Laboratory II	(2)
467	Electric and Magnetic Fields	(3)
468	Fields and Waves	(3)
471	Linear Feedback Control Systems	(3)
480	Logical Design	(3)
503	Advanced Electrical Engineering Laboratory II	(3)
511	Introduction to Communication Systems	(3)
512	Digital Communication Systems	(3)
517	Advanced Electromechanics	(3)
520	Engineering Analysis II	(3)
528	Electromagnetic Radiation and Wave Propagation	(3)
537	Electric Power Systems I	(3)
538	Electric Power Systems II	(3)
560	Semiconductor Device Design	(3)
561	Solid State Engineering	(3)
562	Electronic Circuits II	(3)
563	Communication Circuits Design	(3)
564	Electronic Circuits III	(3)
567	Introduction to Lasers and Masers	(3)
571	Nonlinear and Sampled-Data Control Systems	(3)
581	Advanced Logical Design	(3)
582	Digital Systems Laboratory	(3)
584	Computer Aided Design	(3)

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. For major work, a candidate must hold a bachelor's degree in Electrical Engineering or its equivalent.

595	Independent Problems	(1-3)
599	Topics in Electrical Engineering	(2-3)
601	Electromagnetic Energy Conversion I	(3)
602	Electromagnetic Energy Conversion II	(3)
606	Power System Analysis	(3)
607	Advanced Topics in Power Engineering	(3)
611	Linear System Analysis I	(3)
612	Linear System Analysis II	(3)
613	Optimal Control Theory	(3)
614	Sampled-Data Control Systems	(3)
616	Advanced Topics in Control	(3)
621	Introduction to Antennas	(3)
625	Electromagnetic Propagation and Scattering	(3)
626	Microwave Engineering	(3)
627	Electromagnetic Fields	(3)
631	Discrete Information Theory I	(3)
632	Discrete Information Theory II	(3)
635	Pattern Recognition	(3)
640	Continuous Stochastic Processes I	(3)
641	Continuous Stochastic Processes II	(3)
645	Communication Systems I	(3)
646	Communication Systems II	(3)
650	Electro-Optical Properties of Materials	(3)
653	Optical Processing	(3)
660	Electronic Device Design	(3)
661	Solid-State Electronics	(3)
665	Integrated Circuits	(3)
666	Advanced Topics in Solid State Electronics	(3)
670	Quantum Electronics	(3)
672	Molecular Properties in Electronic Devices	(3)
681	Digital Processors	(3)
682	Switching Theory	(3)

683	Automata Theory	(3)
711	Network Synthesis I	(3)
712	Network Synthesis II	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Seminar	(0)
783	Special Problems in Electrical Engineering	(1-3)

Engineering Mechanics

Graduate Faculty: Professors Millard F. Beatty (Director of Graduate Studies), Oscar W. Dillon, Jr., Donald C. Leigh (Chairman), Frank J. Rizzo, T. Richard Robe, Theodore R. Taichert. Associate Professors Louis M. Brock, Nelson Hsu, Stanley E. Jones, David J. Shippy.

The Department of Engineering Mechanics provides programs for study and research leading to the Master of Science in Engineering Mechanics and the Doctor of Philosophy. The master's degree requires 24 credit hours of course work and a thesis (Plan A), or in some circumstances with departmental approval, 30 hours of course work without a thesis (Plan B). In addition to the general information on the Ph.D. degree at the front of this Bulletin, note that the Department requires a reading knowledge of one foreign language.

Most engineering disciplines exist to serve society directly. Such disciplines are recognized by and often named for the products associated with them, e.g., aircraft structures, metals, ceramics, etc. Engineering Mechanics, on the other hand, exists to serve all of these disciplines by concerning itself with the fundamental laws, mathematical apparatus, and basic experimental methods common to all those phases of engineering which are based on mechanics. Students enter the graduate program in Engineering Mechanics from all branches of engineering and also from mathematics and physics.

Fields of concentration for study are (1) continuum mechanics, (2) materials sciences, (3) dynamics analysis, (4) computational stress analysis, (5) mechanical design analysis, (6) mechanical behavior of solids and fluids, (7) Experimental methods, and (8) applied mathematics. Typical areas in which research has been carried out in the Department include infinitesimal and finite elasticity, viscoelasticity, plasticity, non-newtonian fluids, rigid and flexible body dynamics, particle dynamics, wave propagation, stability analysis, and biomechanics. Investigations in these areas have included theoretical, experimental

and numerical methods.

For further information contact the Director of Graduate Studies.

503	Introduction to Continuum Mechanics	(3)
505	Viscoelasticity	(3)
506	Mechanics of Composite Materials	(3)
513	Mechanical Vibrations	(3)
531	Advanced Strength of Materials	(3)
532	Experimental Stress Analysis	(3)
533	Aircraft and Missile Structural Analysis	(3)
544	Introduction to Nondestructive Testing	(3)
585	Fourier Series and Boundary Value Problems	(3)
603	Mechanics of Plastic Solids I	(3)
604	Mechanics of Plastic Solids II	(3)
605	Foundations of Inelasticity	(3)
607	Advanced Inelasticity	(3)
613	Nonlinear Oscillations	(3)
614	Mechanics of Space Vehicles	(3)
631	Elastic Stability of Mechanical Systems	(3)
632	Foundations of Elastic Stability	(3)
645	Advanced Dynamics I	(3)
646	Advanced Dynamics II	(3)
651	Mechanics of Elastic Solids I	(3)
652	Mechanics of Elastic Solids II	(3)
653	Methods of Applied Differential Equations	(3)
661	Nonlinear Continuum Mechanics I	(3)
662	Nonlinear Continuum Mechanics II	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
780	Special Problems in Engineering Mechanics	(3)

English

Graduate Faculty: Professors Joseph Bryant (Chairman), John L. Clubbe, Guy Davenport, John G. Demaray (Director of Graduate Studies), Robert Evans, William Jansen, Stephen Manning, Jerome Meckier, Donald Ringe. Associate Professors Thomas Blues, William Campbell, Lee Elioseff, Joseph Gardner, William Gordon, John L. Greenway, James Baker Hall, Joan Hartwig, Robert Hemenway, Kevin Kierman, Charles Rowell, Larry Swingle, and Arthur Wrobel.

Associate Member: Associate Professor Joan Blythe.

The Department of English offers programs leading to the M.A. and to the Ph.D. degrees. The master's degree may be obtained either by Plan A or Plan B, as defined in this bulletin. With the consent of the Dean of The Graduate School and the Director of Graduate Studies in English, students may undertake a program leading to the master's degree provided that they have

(1) completed the equivalent of a University of Kentucky undergraduate major in English and,

(2) fulfilled the admission requirements of the Graduate School. Applicants who fail to meet the first qualification may be admitted with the understanding that their program must include some ad-

vanced undergraduate work in English in addition to the courses normally required for the M.A. A reading knowledge of one foreign language is required for the master's degree.

Students will be evaluated on their merits before they are officially admitted to the doctoral program by the English graduate faculty. Students who received their master's degree from the University of Kentucky will be judged on their course grades, on the recommendations of their instructors, and their Graduate Record Examination scores. Students who have received their master's degree elsewhere will be evaluated on their course grades after the equivalent of one semester's full time graduate work at the University of Kentucky, instructor's recommendations, and GRE scores.

There is no specific requirement in a minor area, but such work may be required by a student's Special Committee if it appears to be essential to the major research or concentration interest. Ph.D. candidates normally offer German and French for their language requirement, but substitutions may be authorized according to the procedure described in this Bulletin.

A detailed statement of departmental requirements for both the M.A. and Ph.D. is available on request.

401	Advanced Professional Writing	(3)
414	Introduction to Modern English Linguistics	(3)
421	Chaucer	(3)
422	English Renaissance: 1500-1600	(3)
423	English Renaissance: 1600-1660	(3)
425	Shakespeare Survey	(3)
426	Shakespeare Studies I	(3)
427	Shakespeare Studies II	(3)
428	Milton	(3)
430	The Restoration and Early 18th Century: 1660-1730	(3)
431	The Later 18th Century: 1730-1780	(3)
435	The Romantic Movement: 1780-1815	(3)
436	The Romantic Movement: 1815-1830	(3)
438	Victorian Period: 1830-1860	(3)
439	Victorian Period: 1860-1900	(3)
440	The 18th Century English Novel	(3)
441	The 19th Century English Novel	(3)
442	The 20th Century English Novel	(3)
451	American Literature, 1800-1860	(3)
452	American Literature, 1860-1900	(3)
453	American Literature Since 1900	(3)
454	American Novel Before 1900	(3)
455	Modern American Novel	(3)
473	General Introduction to Folklore	(3)
474	American Folklore	(3)
477	Regional Occupational, and Folklore of the United States	(3)
478	Appalachian Folklore	(3)
490	English Drama I	(3)
491	English Drama II	(3)

501	Workshop in Imaginative Writing	(3)
509	Composition for Teachers	(3)
510	American English	(3)
512	Modern English Grammar	(3)
515	Phonological Analysis	(3)
516	Grammatical Analysis	(3)
518	History of the English Language	(3)
519	Introduction to Old English	(3)
520	Beowulf	(3)
521	Middle English Literature	(3)
541	Contemporary British Novel	(3)
542	Twentieth Century British Literature	(3)
550	American Literature Before 1800	(3)
560	Comparative Literature I	(3)
561	Comparative Literature II	(3)
562	Comparative Literature III	(3)
563	Comparative Literature IV	(3)
566	Modern Drama	(3)
568	History of Literary Criticism I	(3)
569	History of Literary Criticism II	(3)
570	Selected Topics for Advanced Studies in Literature	(3)
572	Studies in English for Teachers	(3)
579	Oral Narration in Folk Cultures	(3)

Pro-seminars: The purpose of the pro-seminar courses (600 level) is to impart through lectures and discussion both the facts of literary history and the techniques of literary analysis. They are, therefore, designed to go beyond the mere information level to techniques of contemporary literary criticism and scholarship.

581	Aesthetics of Film	(3)
600	Bibliography and Methods of Research	(3)
620	Studies in Middle English Literature	(3)
621	Studies in Chaucer	(3)
622	Studies in English Literature: 1500-1600	(3)
623	Studies in English Literature: 1600-1660	(3)
625	Studies in Renaissance Drama Exclusive of Shakespeare	(3)
626	Studies in Shakespeare	(3)
628	Studies in Milton	(3)
630	Studies in English Literature: 1660-1720	(3)
631	Studies in English Literature: 1720-1780	(3)
635	Studies in Literature: 1780-1815	(3)
636	Studies in Literature: 1815-1830	(3)
638	Studies in English Literature: 1830-1860	(3)
639	Studies in English Literature: 1860-1900	(3)
640	Studies in the 19th Century British Novel	(3)
642	Studies in Modern British Literature	(3)
643	Studies in Modern British and American Poetry	(3)
651	Studies in American Literature Before 1860	(3)
652	Studies in American Literature: 1860-1900	(3)
653	Studies in American Literature Since 1900	(3)
656	Black American Literature	(3)
660	Modern Critical Theory	(3)
673	Studies in Folklore	(3)
682	Studies in Fiction	(3)
683	Studies in Drama	(3)
684	Studies in Poetry	(3)
720	Seminar in Medieval Literature	(3)
722	Seminar in 16th Century Literature	(3)
723	Seminar in 17th Century Literature	(3)
726	Seminar in Shakespeare	(3)
730	Seminar in 18th Century Literature	(3)
735	Seminar in Romantic Literature	(3)
738	Seminar in Victorian Literature	(3)
740	Seminar in 20th Century British Literature	(3)
750	Seminar in Colonial Literature	(3)

751	Seminar in American Literature: 1800-1860	(3)
752	Seminar in American Literature: 1860-1900	(3)
753	Seminar in American Literature Since 1900	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Seminar in Special Topics	(3)
774	Seminar in Comparative Literature	(3)
780	Directed Studies	(1-3)

Entomology

Graduate Faculty: Professors Wyman Dorough, Fred Knapp, Bobby Pass (Chairman and Director of Graduate Studies), Juan Rodriguez, Richard Thurston, Associate Professors Douglas Dahlman, Paul Freytag, and Gerald Nordin.

Associate Member: Assistant Professor Kenneth Yeargan.

The Department of Entomology offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees. Individual graduate programs are planned by the student in consultation with his adviser and the Director of Graduate Studies. Study and research are available in various areas of entomology including applied entomology, behavior, biological control, host plant resistance, insect biology and ecology, insect nutrition, pathology, immature insects, medical and veterinary entomology, physiology, taxonomy, toxicology, and acarology. Plan A is offered for the Master's degree. A reading knowledge of one modern foreign language is required for the Ph.D. degree.

400	Economic Entomology	(3)
401	Agri-Chemicals in Pest Management	(3)
402	Forest Entomology	(3)
530	Insect Pest Management	(3)
561	Medical Entomology	(4)
562	External Morphology of Insects	(4)
563	Parasitology	(4)
564	Insect Taxonomy	(4)
606	Insecticide Chemistry and Toxicology	(3)
626	Insect Pathology	(3)
635	Insect Physiology	(4)
650	Advanced Applied Entomology	(3)
660	Immature Insects	(4)
665	Insect Ecology and Behavior	(3)
667	Principles of Animal Systematics	(3)
670	Experimental Methods in Entomology	(2)
672	General Acarology	(4)
680	Biological Control of Insects	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Entomological Seminar	(1)
780	Special Problems in Entomology and Acarology	(2-3)
790	Research in Entomology and Acarology	(1-6)

Family Studies: Human Development And Resource Management

Graduate Faculty: Associate Professors Lisa Barclay (Director of Graduate Studies), John Crosby (Chairman), David Payne, Kathy Thornburg, M. O'Neal Weeks.

Associate Members: Assistant Professors Rose Davis, Maryann Paynter, George Wise.

The Department of Family Studies: Human Development and Resource Management offers the Master of Science in Home Economics degree. Within the M.S. in Home Economics degree are five major areas of concentration or options. These options are: Early Childhood Education, Consumer Economics, Theory and Research (Plan A, Thesis only), Family and Developmental Services (Plan B, Non-thesis only), and Family Life Education. Plan A requires a minimum of 30 class-hour credits plus six hours thesis. Plan B requires a minimum of 36 class-hour credits. The various options are designed to enable the student to prepare for various careers. The Theory and Research option is recommended as a pre-doctoral option, while the Services is intended for those who expect the M.S. in Home Economics degree to be a terminal degree. Electives within each option are available in the social and physical sciences, and in other supporting disciplines.

411	Student Teaching in Early Childhood Education	(12)
462	Personal and Family Finance	(3)
507	Assessment of Young Children	(2)
540	Intensive Study of the Child and The Family	(3)
541	Supervised Teaching in the Early Childhood Laboratory: I	(3)
542	Supervised Teaching in the Early Childhood Laboratory: II	(3)
551	Woman in Contemporary Society	(3)
552	Organization and Administration of Early Childhood Education Programs	(3)
553	The Child in His Family	(3)
554	Working with Parents	(3)
555	Fostering Cognitive Development in Children	(3)
557	Infant Development	(3)
561	The Consumer with Limited Resources	(3)
562	Family Management for Multi-Roles	(3)
563	Family Consumers and the Law	(3)
573	Family Life Education	(3)
586	Field Instruction in Management and Family Economics	(1-6)
595	Special Problems in Child Development and Family Relationships	(1-3)
596	Special Problems in Management and Family Economics	(1-3)
599	Field Experiences	(3)
602	Consumer Economics	(3)

604	Culturally Different Children and Families	(3)
605	Practicum in Directing Early Childhood Programs	(4)
606	Child Advocacy	(1)
652	Readings in Family Relations	(3)
653	Family Theory and Dynamics	(3)
655	Theory and Dynamics of Human Development	(3)
658	Adolescent Development	(3)
662	Social and Economic Decisioning in the Family	(3)
668	Allocation of Family Resources	(3)
768	Residence Credit for the Masters Degree	(1-6)
773	Seminar in Management and Family Economics	(3)
775	Seminar in Child Development	(3)
785	Special Problems in Child Development and Family Living	(1-3)
786	Special Problems in Management and Family Economics	(1-3)
790	Familial and Developmental Research Methods	(3)

Forestry

Graduate Faculty: Professors Boyd Richards and Bart Thielges (Chairman). Associate Professors Stanley Carpenter, George Coltharp (Director of Graduate Studies), Ruen Chiu Tang.

Associate Members: Assistant Professors Donald Graves, Robert L. Rumsey, Robert Wittwer.

Joint Appointments: Associate Professors Gerald Nordin and Louis Shain.

The Department offers graduate work leading to the Master of Science in Agriculture (Forestry Option). Degrees are awarded under Plan A only, which requires a minimum of 24 semester hours of graduate course work plus an acceptable thesis. The prospective student must have an undergraduate degree in forestry or be prepared to take a core of forestry courses in addition to a full masters program.

The study and research program may be directed in any one of the following areas: wood science, forest soils, forest hydrology and water quality, forest ecology, forest physiology, forest wildlife, forest biometrics, forest economics, and surface mine reclamation.

Students interested in pursuing further graduate studies in the forestry area may enter one of several interdepartmental programs such as Plant Physiology, Crop Science, and Soil Science.

Additional information concerning the graduate program in forestry may be obtained by contacting the Director of Graduate Studies.

400	Wood Identification and Properties	(3)
402	Forest Entomology	(3)
405	Mechanics and Physics of Wood	(3)
410	Forest Pathology	(3)

412	Forest Economics	(3)
415	Wood Seasoning and Preservation	(3)
420	Wood Products	(3)
425	Timber Management	(4)
430	Forest Wildlife and Range Management	(3)
440	Forest Resources For Recreation	(3)
445	Forest Fire: Control and Use	(2)
450	Senior Seminar in Forestry (Proseminar)	(2)
455	Forest Policy and Administration	(3)
460	Forest Watershed Management	(3)
511	Forest Regeneration	(3)
512	Forest Tree Physiology	(3)
526	Adhesive Bonding of Wood	(3)
562	Forest Soils	(3)
599	Independent Work in Forestry	(1-3)
601	Research Methods in Forestry	(3)
611	Forest Genetics	(3)
612	Forest Ecosystem Analysis	(4)
628	Mechanics of Wood and Fiber Composites	(3)
629	Advanced Wood Physics	(3)
768	Residence Credit for Master's Degree	(1-6)
781	Special Problems in Forestry	(1-3)
791	Research in Forestry	(1-3)

French Language and Literature

Graduate Faculty: Professors Jean Charron, Phillip Duncan (Chairman, Director of Graduate Studies), Raymond Lacharite, Theodore Mueller. Associate Professors Virginia La Charite, and Rupert Pickens.

Associate Members: Assistant Professors Mary Lynne Flowers, John Rea.

The Department of French Language and Literature offers graduate programs leading to the M.A. and Ph.D. degrees in French language and literature.

Requirements for the M.A. degree in French: The department offers the M.A. degree according to Plan B only. Candidate must select four of the following as areas of specialization for the M.A. degree: medieval, 16th, 17th, 18th, 19th, 20th Century French Literature, and language civilization. In the areas of literature, the candidate must pass a written, comprehensive examination. In the language civilization area (if chosen), the candidate must complete three of the following courses with a grade of B or better: FR 507, 517, 550, 607 and either 516 or 603. Candidates must also demonstrate a reading knowledge of another foreign language. The M.A. examination will be given every March and July. Application for the examination should be made to the Director of Graduate Studies no later than 14 day prior to the date of examination.

Requirements for the Ph.D. degree in French: Applicants for the Ph.D. degree are required to complete at least 10 graduate courses in French beyond the M.A. In addition to their program of study in the

department, candidates must demonstrate a reading knowledge of two other Romance languages (Latin included) or of one other Romance language and German or Russian.

Candidates for the Ph.D. degree are required to pass written examinations, followed by an oral examination, to be held after the papers have been read and graded. Candidates will be examined on their choice of three of the following areas: medieval-16th, 17th, 18th, 19th and 20th Century Literature.

The candidate's dissertation, submitted in accordance with the regulations of The Graduate School, must be within one of the three areas chosen for the qualifying examination.

The Ph.D. written examinations are given as convenient during the academic year but are not scheduled during the summer period (May 1 to September 1). Application for the examination should be made to the Director of Graduate Studies no later than 10 days prior to the date of examination.

For further information concerning the M.A. and Ph.D. programs in French, consult the Director of Graduate Studies.

All courses listed below are offered on a rotating basis and no later than every eighth semester.

406	Advanced French Grammar and Composition	(3)
407	French Phonetics	(3)
412	Advanced French Conversation	(3)
417	Linguistic Survey of French	(3)
421	Topics in French Literature in Translation I	(3)
422	Topics in French Literature in Translation II	(3)
423	French Literature in Translation: 20th Century	(3)
435	A Survey of French Literature of the Middle Ages	(3)
436	A Survey of French Literature of the Renaissance	(3)
437	A Survey in French Literature of the 17th Century	(3)
438	A Survey of French Literature of the 18th Century	(3)
439	A Survey of French Literature of the 19th Century	(3)
440	A Survey of French Literature of the 20th Century	(3)
460	Masterpieces of the French Novel	(3)

*FR 435, 437, 439, 462 will normally be offered in the fall; FR 436, 438, 440, 461 in the spring.

461	Masterpieces of French Drama	(3)
462	Masterpieces of French Poetry	(3)
507	Translation and Interpretation	(3)
516	Introduction to Old French	(3)
517	Introduction to the Phonological Structure of French	(3)

550	Contemporary French Culture	(3)
553	The Teaching of Modern Foreign Languages	(3)
603	The Development of the French Language	(3)
607	Syntactic Structure of French	(3)
610	Romance Philology	(3)
611	Old Provençal	(3)
612	Medieval Narrative I: The Early Tradition	(3)
613	Medieval Narrative II: The Romance	(3)
616	The Didactic Tradition	(3)
619	The Medieval Lyric	(3)
621	French Renaissance Literature I	(3)
622	French Renaissance Literature II	(3)
623	Rabelais and the Conteurs	(3)
624	Montaigne	(3)
630	Corneille and the Pre-Classical Drama	(3)
631	Racine and the Tragic Theater	(3)
632	Moliere and the Comic Theater	(3)
633	Seventeenth-Century French Prose	(3)
635	History of Ideas in the 17th Century	(3)
636	Seventeenth Century Poetry	(3)
640	Eighteenth Century Prose Literature I	(3)
641	Eighteenth Century Prose Literature II	(3)
643	The 18th Century French Novel	(3)
645	History of Ideas in the 18th Century	(3)
651	French Romanticism I: Prose	(3)
652	French Romanticism II: Poetry and Theater	(3)
653	Baudelaire, Rimbaud, Mallarme	(3)
654	Realism	(3)
656	Naturalism	(3)
661	Contemporary Prose I	(3)
662	Contemporary Prose II	(3)
666	Contemporary French Theatre	(3)
672	Contemporary Poetry	(3)
714	Seminar in the History of the French Language	(3)
715	Seminar in Medieval French Studies	(3)
716	Seminar in French Literature of the Renaissance	(3)
717	Seminar in 17th Century French Literature	(3)
718	Seminar in 18th Century French Literature	(3)
719	Seminar in 19th Century French Literature	(3)
720	Seminar in 20th Century French Literature	(3)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(0-12)
780	Special Studies in French	(3)

Geography

Graduate Faculty: Professor Thomas Field, P. P. Karan. Associate Professors W. A. Bladen, Thomas Leinbach, Karl Raitz (Chairman and Director of Graduate Studies), Gary Shannon, W. A. Withington. Associate Members: Assistant Professors Phillip D. Phillips, Richard Ulack.

The Department of Geography offers both M.A. (Plan A and Plan B) and Ph.D. programs. The professional training in doctoral and masters programs provides research-oriented and applied analytical skills relevant to present and anticipated future needs for geographers. The research training and skills of individual

graduate students are developed in research seminars and course work in several major focuses:

Cultural Geography—Problem-oriented studies in population growth and change, social and behavioral influences on locational character, urban and rural settlement patterns and processes, distribution and interaction of ethnic groups.

Urban Geography—Three facets of urban analysis are emphasized: basic principles and theories of urban geography; social geography of the city; and comparative understanding of world cities.

Economic Geography—Emphasis is on the spatial analysis of transportation systems and their impact, as well as the empirical and theoretical study of industrial location and development.

Political Geography—Topical analysis centers upon factors affecting the viability of political units, political aspects of development, and the role of increasing economic interdependence in international affairs.

Regional Development—Analysis of developmental change within a variety of spatial and topical viewpoints. Spatial development emphasizes type areas at the local, regional, and worldwide scales; while developmental topics include urban, cultural, population, economic and political processes.

The faculty includes members who have a major regional research interest, including extensive field experience, in the following areas: Southeast and South Asia, including adjacent Himalayan or highland Asia; Australia and Southwest Pacific; and North America, including the Southeast and Appalachia.

Applicants for the Ph.D. in geography must conform to the general requirements of The Graduate School as set forth in the first part of this Bulletin. Although there is no specific course work required in the Ph.D., the program consists of (1) core courses (Geo 700, 702, 707) in the theory and methodology of geography (Geo 710 will be offered periodically as students numbers and performance necessitates); (2) seminars, independent study and directed research in one of the research focuses noted above or in cognate disciplines; (3) successful examination in one modern foreign language; and (4) a dissertation based on original research. Each doctoral candidate, in consultation with the Director of Graduate Studies and the candidate's Special Committee, outlines a

program designed to meet his or her professional academic goals.

Applicants for the M.A. degree in geography follow a broadly based program which consists of (1) recommended courses (Geo 601, 700, and 707); (2) elective courses in geography and cognate disciplines according to the student's academic goals and career objectives; and (3) the completion of a Master's Thesis. At the discretion of the faculty, a non-thesis degree (Plan B requiring six additional credits) may be permitted. Students in Plan B must submit three research papers as part of the course work. The M.A. student may not take more than six hours of course work below the 600 level. Except for methodological seminars, students are not required to take specific courses. The program is tailored to meet each student's particular needs and requirements, and many interdisciplinary topics may be chosen for study.

All graduate students are expected to demonstrate competence in basic research skills and tools, in critical analysis, scientific writing, and accurate verbalization as part of the degree requirement. During initial phases of graduate work, a strong emphasis is placed upon acquiring competence in the fields of bibliographic techniques, cartographic analysis, and the application of field and quantitative techniques to geographic problems.

407	Development of Geographic Thought	(3)
500	Introduction to Analytic Techniques in Geography	(3)
501	Field Studies in Geography	(3)
505	Cartography	(3)
520	Geography of the United States and Canada	(3)
522	Geography of Kentucky	(3)
524	Geography of Latin America	(3)
526	Geography of Europe	(3)
528	Geography of Asia	(3)
530	Geography of South Asia	(3)
532	Geography of Southeast Asia	(3)
534	Geography of Australia and the Pacific Islands	(3)
536	Geography of Africa	(3)
540	Principles of Urban Geography	(3)
541	Geographic Perspectives on Contemporary Urban Problems	(3)
542	Political Geography	(3)
543	Urbanization in the Developing World	(3)
544	Population Geography	(3)
550	Geography of Natural Resources	(3)
560	Independent Work in Geography	(3)
565	Topics in Geography	(3)
601	Field Methods in Geography	(3)
605	Computer Cartography	(3)
625	Regional Analysis	(3)
630	Regional Study of Special Areas	(3)
640	Transportation Geography	(3)

643	Urban Transportation Planning	(3)
652	Soil Classification and Geography	(3)
655	Special Study of Systematic Geography	(3)
695	Social Ecology	(3)
700	Quantitative Methods in Geography	(3)
702	Concepts in Geography	(3)
707	Seminar in Development of Geographic Thought	(3)
710	Research Methods and Methodology in Geography	(3)
715	Seminar in Systematic Geography	(3)
720	Seminar in the Geography of the United States and Canada	(3)
725	Applied Geography in Developmental Analysis	(3)
730	Seminar in Regional Geography	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Advanced Seminar in Geography	(3)
772	Special Research Problems in Geography	(3)

Geology

Graduate Faculty: Professors William Brown, William Dennen (Chairman), William MacQuown, Associate Professors William Blackburn (Director of Graduate Studies), Bruce Moore, John Trailkill.

Associate Members: Associate Professor Irving Fisher, Assistant Professor Frank Ettensohn.

The Department of Geology offers graduate work leading to the M. S. degree under Plan A, and to the Ph.D. The credentials of each applicant are considered individually and applicants from other disciplines are encouraged to apply. Prospective students should have a good background in basic science and demonstrated competence at the undergraduate level. Deficiencies in geology, allied sciences and mathematics must be removed by such course work as the departmental committee on Graduate Studies may specify. Each candidate is expected to have or to obtain practice in geologic field work, and must submit an acceptable thesis or dissertation which demonstrates ability to conduct sound research. For the Ph.D., the candidate must demonstrate acceptable reading ability in one foreign language common to scientific literature.

The principal fields of study offered are mineralogy-petrology, geochemistry, sedimentology, stratigraphy, structural geology-tectonics, paleontology-paleoecology, and geophysics. Other fields are available, however, and interdisciplinary studies are encouraged.

Resources for the conduct of advanced studies include reference collections, an outstanding library, well equipped laboratories including the Cabot Spectrographic

Laboratory, a laboratory for experimental petrologic studies, sample preparation and field equipment, portable diamond drilling apparatus, and portable geophysical instrumentation for gravity, magnetic, and seismic studies. A permanent, three-component, high quality seismic station is being installed. Laboratory apparatus includes x-ray fluorescence and diffraction, atomic absorption and colorimetric spectrophotometry, dc arc and laser microprobe emission spectrography, petrographic microscopy, cathodoluminescence, an air abrasive unit, x-ray radiograph, and other special equipment for sedimentologic and paleontologic studies. Additional, extra-departmental facilities for computing, neutron activation, electron microscopy, and equipment for clay mineralogy, river studies, remote sensing and rock mechanics are readily available.

401	Paleontology	(3)
420	Structural Geology	(3)
423	Field Work in Regional Geology	(6)
424	Field Work and Report in Regional Geology	(7)
450	Stratigraphy and Sedimentation	(3)
461	Petrology	(3)
471	Physics of the Earth	(3)
501	Stratigraphic Paleontology	(3)
510	Ore Deposits	(3)
511	Petroleum Geology	(3)
530	Low Temperature Geochemistry	(3)
531	Igneous and Metamorphic Geochemistry	(3)
540	Advanced General Geology	(3)
552	Sedimentary Petrology	(3)
560	Optical Mineralogy	(3)
561	Structural Mineralogy	(3)
571	Introductory Geophysics-Gravity and Magnetism	(3)
572	Seismology and Seismic Exploration	(3)
602	Paleoecology	(3)
603	Micropaleontology	(3)
612	Mineral Deposits	(3)
620	Tectonics	(3)
624	Mesosopic Structures	(3)
652	Paleozoic Stratigraphy	(3)
653	Mesozoic and Cenozoic Stratigraphy	(3)
654	Carbonate Petrology	(3)
655	Hydrogeology	(3)
660	Petrography	(3)
662	X-Ray Mineralogy	(3)
665	Igneous and Metamorphic Petrology	(3)
670	Selected Topics in Geophysics	(3)
671	Earthquake Seismology	(3)
681	Mineralogical and Chemical Analysis of Soils	(4)
703	Paleoecology Seminar	(3)
720	Graduate Tectonics Seminar	(3)
732	Chemical Sedimentology	(3)
733	Petrologic Geochemistry	(3)
741	Clay Mineralogy	(3)
760	Petrology Seminar	(2)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(0-12)
782	Individual Work in Geology	(1-3)

GERMANIC LANGUAGES AND LITERATURES

Graduate Faculty: Professors Bernd Kratz (Chairman and Director of Graduate Studies), J. Wesley Thomas, Associate Professor Theodore Fiedler..

Associate Member: Assistant Professor Jay F. Bodine.

The main purpose of graduate work in the Department's field is to provide students with a thorough understanding of German culture, its language and literature and its relationship to Western Civilization as a whole. Graduate instruction is designed to acquaint the students with the aims and methods of scholarship, to develop an intelligent appreciation of literature, and to make them effective teachers or to provide the cultural enrichment to enhance the quality of their work in other pursuits.

The Department offers graduate programs leading to the M.A. (Plan A or B) and Ph.D. degrees in German. Also available are supplementary courses in Scandinavian. Competence in another foreign language, normally French, in addition to German is required for graduate degrees.

Admission requirements include an acceptable undergraduate major in German and a satisfactory score on the Graduate Record Examination. Applicants lacking more comprehensive knowledge of German language and literature may be admitted with the understanding that their program must include some advanced undergraduate work in addition to those courses normally required for the M.A. Before being admitted into the doctoral program, each student will be evaluated by the German graduate faculty on the basis of course grades, including those of at least one semester in the Department, if the M.A. degree was obtained elsewhere, instructor's recommendations, and GRE scores.

Individual programs of study are planned with consideration of the student's competencies and interests. Thus, the department endeavors to be flexible and in teacher preparation, for example, to accommodate particular emphases appropriate for prospective instruction in secondary schools or two or four-year colleges.

Areas of specialization of the graduate faculty of the Department afford flexible coverage in breadth and depth, with particular strength in medieval studies. The Department serves as the publishing center for the international journal, *Colloquia*

Germanica. Graduate students are encouraged to participate in the editorial work. The University has substantial holdings in all areas of German language, linguistics and literature and in supporting fields. Special collections include German drama on microcard and folklore on microfilm, a selection of Danish literature to 1900, and German books printed before 1600 on 35mm microfilm.

GERMAN

412	Modern German Literature in Translation	(3)
506	Tutorial in Minor Germanic Language ..	(3)
516	History of German Literature	(3)
520	Germanic Proseminar	(3)
522	German Impressionism	(3)
532	The German Lyric	(3)
534, 535	Life and Works of Goethe	(3 ea.)
536	Introduction to the History of the German Language	(3)
537	Introduction to Middle High German ..	(3)
538	Advanced German Conversation and Composition	(3)
539	Structure of the German Language	(3)
540	Germany Since 1871	(3)
553	The Teaching of German	(3)
621	Introduction to German Bibliographical Studies	(3)
622	Theories of Literature in German	(3)
624	German Literature of the 16th and 17th Centuries	(3)
625	German Literature of the 18th Century ..	(3)
626	The Age of Goethe (1770-1830)	(3)
627	German Drama of the 19th Century	(3)
628	The German Novelle	(3)
630, 631	Twentieth Century German Literature	(3 ea.)
635	Gothic	(3)
636	Old High German	(3)
640	Studies in Germanic Language and Literature	(3)
642	Medieval German Literature	(3)
643	Longer Epic Verse of the German Medieval Period	(3)
768	Residence Credit for the Master's Degree .	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
778	Seminar: Main Currents of Romance and German Literature	(3)
781	Special Studies in German	(3)
790	Germanic Seminar	(3)

SCANDINAVIAN (Offered as required)

500	Swedish	(3)
501	Swedish Literature from Belman to the Present	(3)
504	Danish	(3)
505	Danish Literature from Holberg to the Present	(3)
510	Medieval Scandinavian Literature in Translation	(3)
511	Scandinavian Literature in Translation: Holberg to Lagerkvist	(3)
610	Old Icelandic	(3)
611	Old Icelandic	(3)

HEALTH, PHYSICAL EDUCATION AND RECREATION

Graduate Faculty: Professors Leon Garrett (Chairman), Joseph Gruber, Pentti Teraslinna. Associate Professors Jay Kearney (Director of Graduate Studies), Don Kirkendall.

Associate Members: Assistant Professors Ralph Mann, Dennis Vinton.

The Department of Health, Physical Education and Recreation offers graduate work leading to the Master of Science degree with an area of concentration in one of the following: health education, therapeutic recreation, recreation administration, park management, generalist physical education, sport psychology or exercise physiology.

The Master's program in health, physical education and recreation is designed to provide a quality graduate program for the following two types of students: (1) active, motivated individuals who desire advanced study to enhance their professional adequacy, and (2) discipline oriented students completing a Master's as an intermediate step toward doctoral work. The objective of the program is to prepare the student to: (1) effectively locate, analyze, and utilize significant elements of the professional literature and research materials, (2) permit an in-depth study of a specialized content area within the field, and (3) acquire a knowledge of sound research procedures.

The program needed to accomplish this objective involves a combination of departmental course offerings, supporting electives, and a required core of statistics and research methods. Inasmuch as the fields of health, physical education, and recreation draw their principles from a variety of disciplines it is appropriate that certain electives be chosen from the supportive areas of the biological and physical sciences and the behavioral and social sciences. Master's candidates with the approval of the Department may select either a thesis (Plan A) or a non-thesis option (Plan B).

Applicants are expected to have a minimum of 21-hours in their respective fields. More specifically, the prerequisites for graduate study in physical education are:

Professional Orientation or History and Principles of Physical Education 2
Individual Sports, Dual Sports, Team Sports,

Aquatics, Gymnastics, and Dance	10
Prevention and Treatment of Athletic Injuries ..	2
Anatomy and Physiology	4
Tests and Measurements in Physical Education ..	2
Kinesiology	2
Physiology of Exercise	2

For therapeutic recreation, recreation and administration, or park management, the prerequisites are:

Interpretations of Leisure and Recreation	2
Recreation Program Planning and Leadership ..	2
Administration and Organization of Recreation ..	2
Introduction to Therapeutic Recreation	
or	
Principles of Outdoor Recreation	2
Supervised Field Study in Recreation	3
Laboratory Courses in the Areas of:	
Sport, Music, Art, Theater, Camping or Dance ..	3

Students who have a strong background in related biological or behavioral science fields may be considered for admission providing they agree to satisfy prerequisites established in each field. Applicants lacking these prerequisites will be expected to satisfy them via directed readings, competency examinations, or prescribed course work. This is in addition to the normal 30-hour master's program.

General Requirements

Regardless of whether the student concentrates in health education, the physical education areas, therapeutic recreation, recreation and park administration, or park management (certificate or non-certificate) all candidates are required to complete the following.

PLAN A (Thesis Option)

EDP 657 Educational Statistics	3-4
or	
STA 670 Basic Statistical Analysis	
HPR 644 Research Techniques Applied to Health, Physical Education and Recreation ..	3
Supporting Electives	6
HPR Area of Concentration	12
HPR Residence Credit for the Master's Degree (768)	6
Total	30-31

or

PLAN B (Non-Thesis Option)

EDP 657 Educational Statistics	3-4
or	
STA 670 Basic Statistical Analysis	3-4
HPR 644 Research Techniques Applied to Health, Physical Education and Recreation ..	3
HPR 782 Independent Research Project	3
Supporting Electives	6
HPR Area of Concentration	15
Total	30-31

For additional information, write to the Director of Graduate Studies, Department of Health, Physical Education and Recreation.

420 Physiology of Exercise	(3)
445 Introduction to Tests and Measurements ..	(3)
472 Kinesiology	(3)
491 Dance in Education	(3)
540 Organization and Administration of Physical Education	(3)
546 Physical Education Workshop	(2)
547 Psychology of Sport and Physical Activity ..	(3)
560 Motor Development in Infants and Young Children	(3)
579 Adapted Physical Education	(3)
592 Choreography	(2)
593 Dance Production	(3)

GRADUATE COURSES FOR MEN AND WOMEN

620 Advanced Exercise Physiology	(3)
621 Exercise and Coronary Heart Disease	(3)
622 Physical Fitness and Related Concepts	(3)
644 Research Techniques Applied to Health, Physical Education and Recreation	(3)
645 Measurement Theory in Health, Physical Education and Recreation	(3)
646 Integrated Development	(3)
647 Motor Learning	(3)
650 Curriculum and Program Development	(3)
651 Facilities, Construction, and Equipment ..	(2)
690 Organization and Administration of the Dance in Education	(3)
695 Independent Study in Physical Education ..	(3)
720 Sports Medicine	(3)
741 Current Studies and Trends in Health and Physical Education	(3)
768 Residence Credit for the Master's Degree ..	(1-6)
770 Seminar in Physical Education	(3)
782 Independent Research	(3)

RECREATION

471 Outdoor Education Through Camping	(3)
478 Senior Seminar in Recreation	(3)
570 Landscape Design of Park and Recreation Areas	(3)
571 Introduction to Therapeutic Recreation ..	(3)
573 Administration and Organization of Recreation	(3)
575 Interpretations of Leisure and Recreation ..	(3)
577 Practicum in Recreation	(3)
610 Implementation of Recreation Services For the Ill or Disabled	(3)
611 Therapeutic Applications of Recreation ..	(3)
676 Current Issues in Recreation	(3)
685 Administrative Practices in Recreation ..	(3)
696 Independent Study in Recreation	(3)
780 Seminar in Recreation	(3)

HEALTH AND SAFETY

430 Methods of Teaching Health Education ..	(3)
507 Driver and Traffic Safety Education	(3)
509 Workshop in Health and Safety	(2)
530 Administration of Health and Safety Education	(3)
607 Advanced Topics in Safety Education	(3)
609 Seminar in Health and Safety Education ..	(3)

HEALTH RADIATION SCIENCES

Graduate Faculty:* Professor Yosh Maruyama. Associate Professors John Calkins, Joseph Sayeg (Chairman and Director of Graduate Studies). Assistant Professor Ralph Christensen.

*Joint appointment through the department of Radiation Medicine, College of Medicine.

Two programs in the Bioradiation Sciences are available leading to the degrees of Master of Science in Radiological Health and Master of Science in Medical Radiation Dosimetry.

Graduates of accredited colleges with an appropriate baccalaureate degree (e.g., Biological Sciences, Physics, Public Health, Mathematics, Chemistry, etc.) may become candidates for one of these degrees. Physics 260 or its equivalent is a prerequisite for both programs, and Computer Science 220 or its equivalent is also a prerequisite for the program in Medical Radiation Dosimetry.

Both programs are an interdisciplinary type. As such, Plan B is utilized for the graduate work, incorporating specific courses in several departments. There is no language requirement. A core of courses is common to both programs. Additional and special course work is prescribed for each program as degree requirements.

CORE PROGRAM

ZOO 540 General Radiation Biology	(4)
ZOO 640 Biological Effects of Radiation	(3)
PHY 472 Interaction of Radiation with Matter	(3)
PHY 535 Experimental Physics, Atomic and Nuclear	(2)
RM 545 Radiation Hazards and Protection ..	(2)
HRS 710 Seminar in Bioradiation Science ..	(1)
STA 670 Basic Statistical Analysis	(4)
Total	19

COURSES OFFERED

690 Research in Radiological Health	(1-3)
695 Research in Radiation Dosimetry	(1-3)
710 Seminar in Bioradiation Sciences	(1)
715 Advanced Problems in Radiation Dosimetry	(2-6)
720 Advanced Problems in Radiological Health	(2-4)

Master of Science in Medical Radiation Dosimetry

ADDITIONAL PROGRAM

ANA 511 Introduction to Anatomy	(4)
PGY 502 Principles Physiology Lectures	(4)
HRS 715 Advanced Problems in Radiation Dosimetry	(2-6)
Area Electives	(2-5)
Total 31 (minimum)	

A practicum in Medical Radiation Dosimetry will continue following completion of formal course work. This applied work will be under the staff of the Department of Radiation Medicine.

690	Research in Radiological Health	(1-3)
695	Research in Radiation Dosimetry	(1-3)
710	Seminar in Bioradiation Sciences	(1)
715	Advanced Problems in Radiation Dosimetry	(2-6)
720	Advanced Problems in Radiological Health	(2-4)

Master of Science in Radiological Health Specialty

ADDITIONAL PROGRAM

CH 600	Epidemiology	(3)
CH 612	Public Health Administration	(3)
HRS 720	Advanced Problems in Radiological Health	(2-4)
Area Electives		(5-7)
13-17		

A practicum in Radiological Health will be required which will consist of approximately 12 weeks of training at (1) a hospital, (2) a government regulatory agency, and (3) a national laboratory. This will be offered during the summer months after the course work has been completed.

Total 32 (minimum)

HIGHER EDUCATION

Graduate Faculty: Professors Collins W. Burnett, Charles F. Elton (Chairman and Director of Graduate Studies), Associate Professor Edgar L. Sagan.

Associate Members: Professor Leslie L. Martin, Assistant Professor Jon Hesselden (Adjunct).

Higher education as a specialized field of study at the University of Kentucky embodies educational content and process relating to students, faculty, and administration in the two-year and four-year college environments. Students receive an in-depth introduction to such aspects of higher education as recruitment, selection and admission; historical backgrounds; faculty role and preparation; organization and administration; the teaching-learning phenomenon in the college setting; student personnel; the junior and community college; curriculum development, implementation and evaluation for undergraduate, graduate and professional programs; and institutional research.

The Department welcomes qualified students regardless of their undergraduate major and recognizes that course experiences from many disciplines may make a very important contribution to the student's understanding of higher education.

The purposes of the Department follow:

1. Provide the student with a critical

analysis of the area of higher education, including the development of an attitude of intellectual curiosity about college and university operations.

2. Provide a major concentration for those who plan to teach and do research in departments of higher education in institutions offering such graduate programs.
3. Provide a support area for those majoring in disciplines other than education, moving shortly or ultimately into college administration
4. Prepare students with backgrounds in allied health who are planning to move into teaching and/or administrative positions in two-year and four-year educational institutions and health care facilities.
5. Provide professional preparation for the following careers:
 - a. General administration—president, provost, chancellor, director, academic dean, research administrator, director of institutional planning.
 - b. Student personnel administration—Admissions officer, registrar, coordinator of student services and activities, dean of students, dean of men, dean of women, director of housing.
 - c. Development officer—director of public relations, alumni relations, or fund raising.
6. Provide research for evaluation in such aspects of higher education as student characteristics, faculty behavior, administrative roles, institutional organization, curriculum design, the teaching-learning process, decision making, and finance and budgeting.

A student who meets the minimal admission requirements of The Graduate School and the College of Education will be considered for admission to the Department.

The Department offers the following four degrees:

1. Master of Science in Education
Major emphasis is on higher education with course work in the following categories:
Higher Education 15
Research Design and Statistics 3
Electives in Education (outside major) 6
Electives outside Education 6
2. Specialist in Education
A minimum of 30 credits at the 600 and 700 levels in Education. At least 24 credits

must be taken at the University of Kentucky.

3. Joint Doctor of Philosophy
Studies in Higher Education is a joint program between the Department of Higher Education and Social and Philosophical Studies:

Required core courses 24
One or more courses in each of four areas:
Foundations, Social Science, Institutional Studies, Inquiry Skills (minimum) 12
Emphasis in Inquiry Skills 12-15

4. Doctor of Education
Each student's doctoral program is planned in consultation with his Special Committee. Program content for the doctoral student in education is selected from the following categories:

Higher Education 24
Research Design and Statistics 9
Electives in Education (outside major) with a minimum of six hours in each of two departments 18
Electives outside Education (all in one department) 24

The Department participates in the joint doctoral program with other regional universities. These programs permit qualified applicants to complete approximately one year of graduate study beyond the Master's degree at the regional institution. The remainder of the academic program must be completed at the University of Kentucky. The work of each student is directed by a joint faculty committee from the two institutions.

Inquiries should be directed to: Director of Graduate Studies, Department of Higher Education, 111 Dickey Hall, University of Kentucky, Lexington, KY 40506.

099	Orientation Seminar for Graduate Students	(0)
708	Internship in College Administration	(4)
718	Trends in Higher Education	(3)
719	College Teaching and Learning	(3)
722	College Student Personnel	(3)
733	Organization and Administration of Higher Education	(3)
734	The Community and Junior College	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
798	Seminar in Higher Education	(3)
799	Research Problems in Higher Education	(3)

HISTORY

Graduate Faculty: Professors Raymond Betts, Carl Cone (Director of Graduate Studies), Mary Wilma Hargreaves, Humbert Nelli, Charles Roland, Robert Seager, Gerald Silberstein, Robert Warth. Associate Professors William Chambliss, Steven Channing, Randolph Daniel, Bruce Eastwood, George Herring,

Robert Ireland, Donald Nugent, Robert Olson, Robert Randall, John Scarborough, Joe Thompson (Chairman).

Associate Members: Assistant Professors Lance Banning, Nancy Dye.

The Master's Program

Students should submit evidence of strong undergraduate preparation in history, preferably an undergraduate major with a minimum grade-point average of 2.8 on a 4.0 scale. Applicants for admission must submit Graduate Record Examination scores and three letters of recommendation from professors familiar with their work. Background in at least one modern foreign language is required for admission. Students will not receive the M.A. degree in history unless they demonstrate reading knowledge of a modern foreign language approved by the Department of History and by The Graduate School. Both Plan A and Plan B are offered.

The Ph.D. Program in History

Those who seek the doctorate in history should follow carefully the general directions governing the subjects of residence, courses, and foreign language requisites set forth in the first part of the Bulletin. The applicant does not become a candidate until knowledge of one modern foreign language approved by the Special Committee has been demonstrated, either a knowledge of a second foreign language or, upon approval, competence in another skill, such as statistics or computer science or oral history, has been demonstrated, and until the Qualifying Examination has been passed and has been approved by The Graduate School. Choice of an alternative to one of the two modern foreign languages is not a matter of the student's right. The decision belongs to the Special Committee to whom the student must demonstrate the appropriateness of the alternative for dissertation research.

The student's work for the doctorate in history is directed by a Special Committee composed of representatives of the areas and fields under three preparation requirements. The committee's chairman directs the dissertation and students should consult this person at their earliest convenience.

Requisites for the Ph.D. candidacy in history will be met as follows:

General Preparation: For the purpose of obtaining a sound factual and interpreta-

tive understanding to supplement work in the major field, the student will pursue guided reading, research, and course work in one of the following areas:

Ancient History (Greek and Roman)
Early Middle Ages (c. 400-c. 1000)
Late Middle Ages (c. 1000-c. 1500)
Early Modern Europe (1450-1770)
Modern Europe (since 1770)
United States History
Britain and the Empire (1485 to present)
Russia and East Europe
The Far East
Latin America

As an alternative method of satisfying the area requirement, the student may opt an area entitled Western Civilization. This area will require 21 graduate hours of course work at the 500-699 level excluding History 606 but including six hours of Ancient History, six hours of Medieval History, and six hours of European History since 1500 (the last specification possibly including Russian and East European History). None of these hours may be in the student's intensive field.

Intensive Preparation: The student will pursue guided reading, research and course work to obtain professional preparation in depth in two of the following fields, neither of which will duplicate the area chosen for General Preparation:

Greece
Rome
Early Middle Ages (400-1000)
Late Middle Ages (1000-1500)
Renaissance and Reformation (to 1648)
Modern Europe (1600-1770)
Modern Europe (1770-1870)
Modern Europe (1870 to present)
United States to 1865
United States since 1865
Britain and the Empire, 1485-1815
Britain and the Empire, 1815 to present
Russia and East Europe, 1700-1890
Russia and East Europe, 1890 to present
Hispanic America since 1810

Specialty Preparation: The student will be prepared in a third field. Requirements for this field may be satisfied in one of the following ways:

1. Achieving competence in some discipline other than history, but in one closely related to the major field of history.
2. Achieving mastery in a special field chosen from within the student's program of Intensive Preparation. Examples of such a field might be United States Intellectual History or the His-

tory of Germany. The special field will normally require course work or directed reading in one or more outside disciplines. The choice of the special field will be initiated by the student and the major professor. Final acceptance will rest with the student's Special Committee.

Students' success in their General Preparation will be evaluated by a written examination. Their success in the Intensive and Specialty Preparations is evaluated by both written and oral examinations.

I. EUROPEAN HISTORY

412	Science and Religion in the Age of Galileo	(3)
417	The Physical World in European Thought: to the Enlightenment	(3)
490	Modern Europe	(3)
500	Pre-Classical and Classical Greece	(3)
501	Fourth Century Greece and the Hellenistic World	(3)
502	A History of the Roman Republic	(3)
503	A History of the Roman Empire	(3)
504	Greek and Roman Medicine	(3)
509	Roman Law	(3)
510	Medieval Civilization I	(3)
511	Medieval Civilization II	(3)
512	Medieval Institutions to the Mid-10th Century	(3)
513	Medieval Institutions Since the Mid-10th Century	(3)
514	History of Spain to 1700	(3)
515	History of Spain from 1700 to the Present	(3)
518	Representations of Nature	(3)
519	The Era of the Renaissance	(3)
520	The era of the Reformation	(3)
521	Europe in the Age of Absolutism	(3)
522	The French and European Revolutions, 1760-1815	(3)
523	Europe, 1814-1870	(3)
524	European Diplomacy, 1870-1918	(3)
525	European Diplomacy Since 1918	(3)
528	Cultural and Intellectual History of Europe from the Renaissance to the French Revolution	(3)
529	The Social and Cultural History of Europe in the 19th Century	(3)
530	The Social History of Europe in the 20th Century	(3)
533	Modern European Imperialism	(3)
534	Russia in the 20th Century I	(3)
535	Russia in the 20th Century II	(3)
536	Intellectual and Cultural History of Russia and East Europe to 1890	(3)
537	Intellectual and Cultural History of Russia and East Europe from 1890 to the Present	(3)
538	The East European World from 1770-1920	(3)
539	The East European World from 1920 to the Present	(3)
540	History of Modern France to 1815	(3)
541	History of Modern France Since 1815	(3)
542	German History 1815-1914	(3)
543	German History Since 1914	(3)
544	A History of Italy 1789-1890	(3)
545	A History of Italy, 1890 to the Present	(3)
546	The Byzantine Empire	(3)
547	The Ottoman Empire	(3)

- 548 History of the Middle East: 1916-1952 . . . (3)
 549 History of the Middle East: 1952 to Present . (3)

II. ENGLAND AND THE BRITISH EMPIRE

- 550 English Constitutional History to 1603 . . . (3)
 551 English Constitutional History Since 1603 . (3)
 552 British Social History During the Tudor-Stuart Period (3)
 554 British History 1815-1901 (3)
 555 British History Since 1901 (3)
 556 The British Empire to 1860 (3)
 557 The British Empire and Commonwealth . . (3)
 558 History of Canada (3)

III. AMERICAN HISTORY

- 560 Colonial America to 1748 (3)
 561 Colonial America and Independence, 1748-1789 (3)
 562 The New Nation, 1789-1828 (3)
 563 Expansion and Conflict, 1820-1860 (3)
 564 Emergence of Modern America, 1877 to 1912 (3)
 565 Recent History of the United States, 1912 to 1939 (3)
 566 Recent History of the United States Since 1939 (3)
 567 Civil War and Reconstruction 1860-1877 . (3)
 568 Cultural and Intellectual History of the United States to 1865 (3)
 569 Cultural and Intellectual History of the United States Since 1865 (3)
 570 Economic History of the United States to 1865 (3)
 571 Economic History of the United States Since 1865 (3)
 572 American Constitutional History to 1865 . (3)
 573 American Constitutional History Since 1865 (3)
 574 The Diplomacy and Foreign Policy of the United States to 1919 (3)
 575 The Diplomacy and Foreign Policy of the United States Since 1919 (3)
 576 The American Frontier (3)
 577 The American Frontier (3)
 578 History of the Old South (3)
 579 History of the New South (3)
 580 U.S. Urban History to 1865 (3)
 581 U.S. Urban History Since 1865 (3)
 582 Immigration and American History, 1815 to the Present (3)
 583 Science in American Society (3)
 584 The Rise of Scientific Medicine in the United States (3)
 586 Economic History of Latin America Since Independence (3)
 587 Twentieth Century Latin American Revolutions (3)
 588 American Social History to 1865 (3)
 589 American Social History Since 1865 (3)

IV. THE FAR EAST

- 590 Japanese History to 1800 (3)
 591 Japanese History Since 1800 (3)
 592 Diplomatic History of East Asia Since 1787 (3)
 593 East Asian History Since World War II . . (3)
 595 Studies in History (3)

THE GRADUATE GROUP Seminars

These seminars are designed to acquaint stu-

dents with the problems, sources and secondary literature in the designated fields in order to prepare them for the graduate written and oral examinations.

- 606 Historical Criticism (3)
 611, 612 Readings in Ancient History (3 ea.)
 613 Readings in Early Medieval History . . . (3)
 614 Readings in High and Late Medieval History (3)
 615 Readings in History of Science and Medicine (Through the Renaissance) (3)
 616 Readings in History of Science and Medicine (Since the Renaissance) (3)
 621, 622 Readings in European History, 1500-1815 (3 ea.)
 623 Readings in European Cultural History Since 1815 (3)
 624 Readings in European Political and Diplomatic History Since 1815 (3)
 625, 626 Readings in British and British Empire History (3 ea.)
 631, 632 Readings in United States History to 1865 (3 ea.)
 633, 634 Readings in United States History Since 1865 (3 ea.)
 635 Readings in Modern Russian History I . . (3)
 636 Readings in Modern Russian History II . (3)
 637, 638 Readings in Latin American History (3 ea.)
 639 Readings in East Asian History (3)
 640 Readings in East Asian History (3)
 695 Independent Work (3)

COURSES IN THE 700 GROUP

These seminars are designed to introduce students to the methods, resources and auxiliary disciplines necessary to research in the designated fields in order to prepare them for the writing of theses and dissertations.

- 700 Special Problems in History (3)
 705 Seminar in Ancient History (3)
 706 Seminar in Medieval History (3)
 710 Seminar in American History, 1607-1783 . (3)
 711 Seminar in American History, 1783-1865 . (3)
 712 Seminar in American History, 1865 to the Present (3)
 715 Seminar in Latin American History (3)
 720 Seminar in Modern European History, 1500-1714 (3)
 721 Seminar in Modern European History, 1714-1870 (3)
 722 Seminar in Modern European History, 1870 to the Present (3)
 730 Seminar in Modern British History (3)

Theses

- 768 Residence Credit for the Master's Degree (1-6)
 769 Residence Credit for the Doctor's Degree (0-12)

HOME ECONOMICS

Degree of Master of Science in Home Economics

Graduate Faculty: Professor Marjorie Stewart (Dean),
 Extension Professor Doris Tichenor (Assistant Extension

Director for Home Economics and Director for Community Development).

The Graduate School rules and regulations for the master's degree apply to the Master of Science in Home Economics. Plan A requires 24 hours plus a thesis and Plan B requires 36 hours. No language is required. Because prerequisites vary within each area, the prospective student is advised to contact the appropriate Director of Graduate Studies, College of Home Economics, University of Kentucky.

For more information about specific departments see that section of the Bulletin which gives a detailed description. The departments are: Family Studies; Human Development and Resource Management; Human Environment; Design and Textiles; and Nutrition and Food Science. For information about Home Economics Education see Vocational Education.

- 575 Community Analysis (3)
 768 Residence Credit for the Master's Degree (1-6)

HORTICULTURE AND LANDSCAPE ARCHITECTURE

Graduate Faculty: Professors Raymond Lockard (Director of Graduate Studies), Hubert Mohr, William Schneider, A.S. Williams (Chairman). Associate Professors Jack Buxton, Thomas R. Kemp, Dean Knavel, Aly Lasheen, Leonard Stolz

Associate Members: Associate Professor Carl Chaplin, Assistant Professor Dale Maronek.

The Department offers graduate work leading to the Master of Science in Agriculture degree. Degrees are awarded primarily under Plan A, but they can be awarded under Plan B with prior approval. The study and research program may relate to Pomology, Vegetable Crops, Floriculture, or Ornamental Horticulture. Research problems are normally related to the discipline of genetics and physiology.

Students interested in working in horticulture toward a Doctor of Philosophy degree may enter the interdepartmental Plant Physiology or Crop Science programs.

- 402 Pomology: Deciduous Fruits I (4)
 502 Pomology: Deciduous Fruits II (3)
 510 Outdoor Vegetable Production (3)
 512 Greenhouse Vegetable Crops (3)
 515 Turf Management (3)
 524 Floriculture (3)
 570 Landscape Design of Park and Recreation Areas (3)
 582 Special Problems in Horticulture (1-4)
 590 Vegetable Crop Breeding (3)

601	Physiological Mechanisms in Horticultural Plants	(3)
625	Advanced Plant Propagation	(3)
732	Mineral Nutrition of Plants	(3)
734	Physiology of Growth and Development	(3)
736	Phylogeny of Cultivated Plants	(3)
768	Residence Credit for Master's Degree	(1-6)
770	Seminar	(1)
790	Research in Horticulture	(1-4)

HUMAN ENVIRONMENT: DESIGN AND TEXTILES

Graduate Faculty: Professor Richard Rankin (Chairman and Director of Graduate Studies).

Associate Member: Associate Professor Assiz Farag.

DESIGN

401	History of Interiors I: A Survey Through the 18th Century	(3)
402	History of Interiors II: A Survey of 19th and 20th Centuries	(3)
405	Interior Lighting: Fundamentals for the Designer	(3)
507	Interior Design Studio V: Total Design/ Total Function	(3)
508	Interior Design Studio VI: Research/Experimentation/Creativity	(3)
528	Res/Pres I: Introductory Concepts of Restoration and Preservation	(3)
536	En Pro II: Environmental Product Design	(3)
548	Pro/Prac II: Professional Practice and Field Experience	(3)
593	Special Problems in Shelter and Interior Design	(1-3)
768	Residence Credit for the Master's Degree	(1-6)
772	Seminar in Interior Design	(2)
783	Special Problems in Interior Design	(1-3)

TEXTILES

412	Merchandising I: Promotion	(3)
414	Merchandising II: Buying Procedures	(3)
430	Tailoring	(3)
439	The Child and His Clothing	(3)
520	Textiles II	(3)
522	History of Textiles	(3)
526	Decorative Textiles	(2)
533	History of Costume	(3)
537	Socio-Psychological and Economic Aspects of Apparel	(3)
540	Textiles and Design Study Tour	(1-3)
590	Merchandising III: Internship	(5)
592	Special Problems in Clothing and Costume Design	(1-3)
597	Special Problems in Textiles	(1-3)
660	Experimental Apparel Construction	(3)
768	Residence Credit for the Master's Degree	(1-6)
772	Seminar in Textiles and Clothing	(2)
782	Special Problems in Clothing and Costume Design	(1-3)
787	Special Problems in Textiles	(1-3)

LIBRARY SCIENCE

Graduate Faculty: Professors Lawrence A. Allen, Robert E. Cazden, Timothy Sineath (Dean and Direc-

tor of Graduate Studies). Associate Professors Lois Chan, Michael H. Harris, Thomas Waldhart.

Since January 16, 1974 the College of Library Science does not admit students during the spring semester. Students are only admitted during the summer term and fall semester.

The College of Library Science offers three degrees, M.A., Plan A; M.A., Plan B; and MSLS. The degree requirements for these degrees are as follows:

I. M.A., Plan A Requirements

A. Course Requirements

1. 36 total credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory Courses (LS 500, 501, 502)
- 21 hours elective
- 6 hours thesis credit
3. 15 hours must be on the 600-700 level

B. Thesis

C. Modern Foreign Language—reading proficiency in French, German, Russian, or Spanish (one required). Another language may be substituted by petition. This requirement may be satisfied by one of four methods:

1. by examination at beginning of each semester.
2. by successful completion of special, non-credit, one semester course in a foreign language.
3. by having completed the undergraduate language requirement at the University of Kentucky with a B average.
4. by satisfying the language requirement for another graduate degree.

D. Oral examination in defense of thesis.

II. M.A., Plan B Requirements

A. Course Requirements

1. 36 credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory (LS 500, 501, 502)
- 6 hours—advanced bibliography or technical processing courses
- 6 hours—cognate courses on 500 level or above
- 15 hours—elective
3. 15 hours must be on the 600-700 level

B. No thesis required

C. Modern Foreign Language—as in M.A., Plan A

D. Final Examination

III. M.S.L.S. Requirements

A. Course Requirements

1. 36 total credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory Courses
- 27 hours—elective
3. 15 hours must be on the 600-700 level

B. No thesis required

C. No modern foreign language competency required

D. Final Examination

The minimum College standards for admission to graduate work in Library Science include a bachelor's degree from an accredited institution, an undergraduate GPA of 2.75 and a combined score of 900 on the verbal and quantitative aptitude tests of the Graduate Record Examination. A separate application to the College of Library Science is also required. For additional information, bulletin, and appropriate forms, contact Assistant Dean, College of Library Science.

500	Library Administration	(3)
501	Introduction to Cataloging and Classification	(3)
502	Reference and Information Services	(3)
503	Selection and Acquisition of Library Materials	(3)
504	Social Foundations of Librarianship	(3)
509	Administration of School Media Centers	(3)
510	Children's Literature and Related Materials	(3)
513	Literature and Related Materials for Early Adolescence	(3)
514	Literature and Related Materials for Young People	(3)
516	School Media Practicum	(3-9)
525	Professional Field Experience	(3)
586	Utilization of Educational Media	(3)
600	Administrative Behavior in Library Management	(3)
601	Advanced Cataloging and Classification	(3)
602	Bibliography of Social Sciences	(3)
603	Bibliography of the Humanities	(3)
604	Bibliography of Science	(3)
605	Introduction to Information Sciences	(3)
606	Automation and the Library	(3)
608	Methods of Research in Librarianship	(3)
609	Public Libraries	(3)
610	Academic Libraries	(3)
611	Scientific and Technical Libraries	(3)
613	Library Systems Analysis	(3)
614	Information Storage and Retrieval Systems	(3)
617	History of Books and Printing to 1800	(3)
618	Reading Interests of Adults	(3)
619	Collection Development in Academic Libraries	(3)
620	Rare Books Bibliography	(3)
621	Special Collections	(3)
623	Subject Bibliography	(3)
624	Library of Congress Classification	(3)
625	History of Books and Printing—1800 to the Present	(3)
626	Government Publication	(3)
627	History of Libraries	(3)

628	Library Buildings	(3)
630	Creative Library Programs for Children	(3)
635	Current Problems in School Libraries	(3)
637	Advanced Literature for Children	(3)
640	Medical Librarianship	(3)
641	Law Librarianship	(3)
686	Cataloging Non-Print Materials	(3)
687	Multi-Media Materials	(3)
690	Special Topics in Librarianship	(3)
695	Independent Study in Library Science	(3)
768	Residence Credit for the Master's Degree	(1-6)

MATHEMATICS

Graduate Faculty: Professors J.D. Buckholtz, Thomas Chapman, Donald Coleman (Director of Graduate Studies), Edgar Enochs, Brauch Fugate, Thomas Hayden, Henry Howard, Frank Keogh, Don Leigh, John Mack (Chairman), Raymond Rishel, Wimberly Royster, Ted Suffridge, Clasine van Winter, James H. Wells, Roger Wets. Associate Professors David Adams, James Beidleman, James Brennan, Richard Carey, Raymond Cox, Paul Eakin, Carl Eberhart, Graeme Fairweather, Steven C. Ferry, Michael Freeman, Ron Gariepy, Wayne Goodwyn, Lawrence Harris, David Johnson, Kenneth Kubota, John Lewis, Anders Lindquist and James Simpson.

Associate Members: Assistant Professors Julio Diaz, L.C. Evans, Da-Lun Wang.

The Department of Mathematics grants the M.A., M.S. and Ph.D. degrees. There are no specific course prerequisites for admission; however, two semesters of advanced calculus, and at least one semester each of algebra and topology are suggested.

The Master of Arts degree, designed for prospective junior college and secondary school teachers, is based on a 30 credit-hour program, requires a reading knowledge of one foreign language and is offered under either Plan A or B.

The Master of Science degree, designed for those planning on a mathematical career in business or industry, is based on a 36 credit-hour program which requires course work in several areas of modern mathematical applications. It is offered under Plan B only; no foreign language is required.

The doctorate is a research degree granted on the basis of broad mathematical knowledge and exhibited creative ability. Course work leading to the doctorate is available in the fields of algebra, analysis (classical and modern), applied mathematics, with specialization in optimization and numerical analysis, differential equations, and topology. A comprehensive examination is required of each student. This examination normally is given after two years of graduate study. At

least two semesters of supervised teaching experience is required of all Ph.D. students.

In order to be admitted to candidacy for the degree, a student must pass proficiency examinations in two foreign languages chosen from French, German or Russian, complete studies in a minor field (either inside or outside the Department) and successfully complete the comprehensive examinations. Subsequent work becomes highly specialized through seminars, independent study, and finally, work on a dissertation which penetrates in depth some field of particular interest. Areas in which members of the faculty have active research projects include algebraic, general and infinite-dimensional topology, group theory, ring theory, algebraic geometry, number theory, one and several complex variables, national approximation, operator theory, differential equations, numerical analysis and optimization and control theory.

410	Mathematics for Economists	(3)
411	Models in Mathematical Biology	(3)
413	Topics in Mathematics	(3)
415	Graph Theory	(3)
416	Principles of Operations Research I	(3)
417	Principles of Operations Research II	(3)
421	Elementary Numerical Analysis I	(3)
423	Introductory Probability	(3)
432	Methods of Applied Mathematics I	(3)
433	Methods of Applied Mathematics II	(3)
441	Geometry I	(3)
442	Geometry II	(3)
462	Matrix Analysis	(3)
471	Advanced Calculus I	(3)
472	Advanced Calculus II	(3)
481	Differential Equations I	(3)
482	Discrete Methods and Models in Applied Mathematics	(3)
483	Differential Equations II	(3)
485	Fourier Series and Boundary Value Problems	(3)
501	Seminar in Selected Topics	(3)
502	Seminar in Selected Topics	(3)
503	Combinatorics	(3)
504	Fundamentals of Applied Mathematics	(3)
505	Linear Algebra	(3)
515	Mathematical Programming and Extensions	(3)
521	Numerical Analysis of Ordinary Differential Equations	(3)
523	Probability Models	(3)
525	Numerical Methods for Differential Equations	(3)
532	Ordinary Differential Equations	(3)
533	Partial Differential Equations	(3)
535	Vector and Tensor Analysis	(3)
536	Operational Calculus and Generalized Functions	(3)
538	Elementary Numerical Analysis II	(3)
551	Topology I	(3)
561	Modern Algebra I	(3)
562	Numerical Linear Algebra	(3)
565	Linear Algebra	(3)

566	Theory of Numbers	(3)
570	Multivariate Calculus	(3)
571	Analysis I	(3)
573	Applied Complex Analysis	(3)
585	Boundary Value Problems of Mathematical Physics	(3)
601	Selected Topics in Mathematics	(3)
602	Topology	(3)
603	Algebra	(3)
604	Analysis	(3)
611	Independent Work in Mathematics	(3-9)
615	Convex Analysis and Optimization	(3)
616	Numerical Techniques for Nonlinear Optimization	(3)
617	Markovian Decision Problems	(3)
618	Combinatorics and Networks	(3)
619	Problem Seminar	(3)
621	Numerical Analysis of Partial Differential Equations	(3)
630	Mathematical Foundations of Stochastic Processes and Control Theory I	(3)
631	Mathematical Foundations of Stochastic Processes and Control Theory II	(3)
632	Advanced Differential Equations	(3)
633	Theory of Partial Differential Equations	(3)
635	Theory of Tensors	(3)
637	Approximation Theory	(3)
639	Research Projects in Biological Modeling	(3)
641	Differential Geometry	(3)
642	Differential Geometry	(3)
643	Selected Topics in Geometry	(3)
651	Topology II	(3)
653	Dimension Theory	(3)
654	Algebraic Topology I	(3)
655	Algebraic Topology II	(3)
661	Modern Algebra II	(3)
667	Group Theory	(3)
670	Analysis II	(3)
671	Functions of a Complex Variable I	(3)
672	Functions of a Complex Variable II	(3)
673	Several Complex Variables	(3)
678	Calculus of Variations	(3)
679	Mathematical Theory of Linear Control Systems	(3)
681	Functional Analysis I	(3)
682	Functional Analysis II	(3)
683	Convergence and Summability	(3)
685	Fourier Analysis	(3)
687	Integral Equations	(3)
715	Selected Topics in Optimization	(3)
721	Selected Topics in Numerical Analysis	(3)
732	Selected Topics in Differential and Integral Equations	(3)
751	Selected Topics in Topology	(3)
752	Selected Topics in Topology	(3)
753	Selected Topics in Functional Analysis	(3)
754	Selected Topics in Functional Analysis	(3)
755	Selected Topics in Topological Algebra	(3)
756	Selected Topics in Topological Algebra	(3)
757	Seminar in Topology	(3)
761	Homological Algebra	(3)
762	Theory of Rings	(3)
763	The Theory of Fields	(3)
764	Selected Topics in Algebra	(3)
765	Selected Topics in Algebra	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Selected Topics in the Theory of Complex Variables	(3)
772	Selected Topics in the Theory of Complex Variables	(3)
773	Selected Topics in Analysis	(3)

774	Selected Topics in Analysis	(3)
777	Mathematical Seminar	(3)
778	Mathematical Seminar	(3)

MECHANICAL ENGINEERING

Graduate Faculty: Professors Richard Birkeback (Director of Graduate Studies), Merle Carter, Clifford Cremers (Chairman), Roger Eichhorn, James Funk, James Lafferty, John Lienhard, Associate Professors Otfried Hahn, Charles Knapp, Shiva Singh.

Associate Members: Professor Orville Stewart, Assistant Professors Robert Altenkirch, Pramode Bhagat, Thomas Eaton, Robert Peck.

The Department of Mechanical Engineering provides programs for study and research leading to the Master of Science in Mechanical Engineering, the Master of Science in Nuclear Engineering, and the Doctor of Philosophy.

Areas of concentration for research and study are (1) thermal sciences comprising heat transfer, thermodynamics and fluid mechanics, (2) design, (3) biomedical engineering, (4) nuclear engineering, (5) air pollution, (6) systems and controls and (7) coal science, (8) power systems, (9) combustion, and (10) acoustics.

Graduate study normally requires a bachelor's degree in engineering, not necessarily in mechanical engineering. An undergraduate degree in chemistry, physics or mathematics combined with a strong interest in engineering topics is suitable preparation when certain required undergraduate courses are also taken.

The master's degree can be completed in one academic year plus a summer, but students holding assistantships usually find it necessary to spend about one and one-half years to complete all of the requirements. A non-thesis option (Plan B) for the master's degree is available for students with acceptable previous research or design experience.

The Ph.D. degree has no formal course requirement. Generally students take a number of courses to prepare for the qualifying examinations and usually need to spend two years to complete a suitable dissertation. Most students find more than one year of course work beyond the master's degree necessary preparation for the qualifying examination. The language requirements for the Ph.D. may be satisfied by either German or Russian.

The Department has seven research laboratories. These are the Boiling and Phase Change Lab, Coal Research Lab, Digital

System Lab, High Temperature and Thermal Radiation Lab, Combustion Lab, Nuclear Engineering Lab, and the Wenner-Gren Research Lab for bio-medical engineering. The Department laboratories are well-equipped with instrumentation, computers, and facilities for study in the areas of air pollution, biomedical engineering, coal research, combustion, fluid mechanics, heat transfer, and nuclear engineering.

475	Introduction to Nuclear Engineering	(3)
480	Thermal Environmental Engineering	(3)
514	Nuclear Reactor Analysis I	(3)
515	Fuel Management and Economics of Nuclear Reactors	(3)
517	Instrumentation for Research	(3)
529	Intermediate Fluid Mechanics	(3)
530	Gas Dynamics	(3)
540	Analysis and Simulation of Dynamic Systems	(3)
563	Basic Combustion Phenomena	(3)
564	Propulsion System Design	(3)
565	Energy Engineering	(3)
566	Direct Energy Conversion Processes	(3)
567	Air Pollution Engineering and Economics	(3)
583	Biotechnology	(3)
590	Elements of Aero-Space Technology	(3)

Prerequisite for graduate work: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics.

611	Nuclear Reactor Analysis II	(3)
620	Advanced Engineering Thermodynamics I	(3)
621	Advanced Engineering Thermodynamics II	(3)
625	Advanced Heat Conduction	(3)
626	Advanced Heat Convection	(3)
627	Radiation Heat Transfer	(3)
630	Fluid Dynamics I	(3)
631	Fluid Dynamics II	(3)
632	Compressible Fluid Flow	(3)
634	Turbulent Flows	(3)
640	Advanced Analysis and Simulation of Dynamic Systems	(3)
642	Advanced Kinematics of Machinery I	(3)
643	Advanced Kinematics of Machinery II	(3)
645	Systems Concepts and Analysis	(3)
647	System Optimization I	(3)
651	System Optimization II	(3)
664	Experimental Methods in Nuclear Engineering	(3)
665	Nuclear Reactor Dynamics	(3)
666	Radiation Damage and Shielding	(3)
667	Nuclear Reactor Design	(4)
685	Biofluid Mechanics	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
772	Bio-Mechanics Seminar	(1)
780	Special Problems in Mechanical Engineering	(3)
781	Special Problems in Bio-Engineering	(3)
782	Advanced Topics in Heat Transfer	(3)
783	Topics in Advanced Systems Theory	(3)

MEDICAL MICROBIOLOGY AND IMMUNOLOGY

Acting Chairman: Norman L. Goodman

Medical Microbiology and Immunology is an interdisciplinary approach to the study of the cell which encompasses both microbial and higher organisms including man. Thus the Department is multidisciplinary in its teaching, research and faculty. The areas of study and research available for students within the Department include microbiology, immunology, cell biology and molecular biology. The Department has no graduate program but individual faculty participate in the graduate programs in biochemistry, biology, microbiology, and physiology and biophysics and may thus direct or co-direct the research of students enrolled in these programs. The program of study developed for each graduate student will be determined by the individual's background and career goals and in appropriate situations may include participation in the education of medical students.

Inquiries concerning the availability of financial support and information concerning the best choice of a graduate program for a particular student should be addressed to the Chairman of the Department of Medical Microbiology and Immunology.

512	Cellular Physiology	(3)
515	General Cell Biology	(3)
611	Biochemistry and Cell Biology of Nucleic Acids	(3)
615	Molecular Biology	(3)
707	Contemporary Topics in Immunology	(3)
710	Special Topics in Cell Biology	(2)

METALLURGICAL ENGINEERING AND MATERIALS SCIENCE

Graduate Faculty: Professors H. Conrad (Chairman), R. DeAngelis (Director of Graduate Studies), P. Gillis, P. Reucroft, G. Sargent, R. Swift, Associate Professor J. Morris.

Associate Member: Assistant Professor A. Fine

The Department offers programs of study leading to the Master of Science in Metallurgical Engineering, or in Materials Science, and the Doctor of Philosophy. The graduate program in the Department has as its aim the development of skills and

techniques which are conducive to independent thought, learning and investigation. Degree programs can be selected by the student from a wide variety of topics in the following and other areas: Physical Metallurgy; Mechanical, Chemical and Electronic Properties; Metal Deformation Processing; Electron, X-ray and Field Ion Microscopy; Ultrahigh Vacuums and High Pressures; Metals, Ceramics and Polymers. Extensive and modern laboratory facilities located in Anderson Hall are available for experimental investigations in these areas.

Preparation for study in this Department normally consists of a bachelor's degree in metallurgical engineering. However, an undergraduate degree in chemistry, physics, mathematics or another engineering discipline provides excellent preparation if coupled with a strong interest in the behavior of materials.

The Master's degree may be obtained by satisfying the usual college requirements. Plan A is preferred. However, students may elect during their first semester of enrollment to substitute six credits of graduate level course work (Plan B) for the thesis. For further information consult the Director of Graduate Studies. There is no language requirement for this degree.

The degree of Doctor of Philosophy is conferred upon candidates who, after completing not fewer than three years of graduate work devoted to study in the broad field of Metallurgical Engineering or Materials Science, present a satisfactory thesis, pass a comprehensive examination on their subject and chosen field and show sufficient promise of scholarly attainment. It is intended to represent the attainment of independent and comprehensive scholarship in the field. Reading knowledge of one modern foreign language and demonstrated competence in a minor area from the fields of engineering, mathematics, physical or biological sciences is required for the Ph.D. degree.

The Department of Metallurgical Engineering and Materials Science does not require the candidate to complete a specified number of academic courses. However, a special program is usually recommended by the student's Special Committee to fulfill specific needs. Admission to the doctoral program requires the passing of a comprehensive preliminary examination, the nature of which is set by the student's Thesis Advisory Committee.

412 Electronic Properties of Materials (3)

421	Solidification and Casting	(4)
425	Ferrous Alloys Processing	(3)
426	Non-Ferrous Alloys Processing	(3)
442	Extractive Metallurgy	(3)
443	Minerals Beneficiation	(3)
444	Minerals Beneficiation Laboratory	(1)
451	Metallurgical Thermodynamics	(3)
505	Viscoelasticity	(3)
506	Mechanics of Composite Materials	(3)
531	Powder Metallurgy	(3)
532	Composite Materials	(3)
534	Physical Structure of Polymers	(3)
535	Mechanical Metallurgy	(3)
536	Ceramic Engineering	(3)
538	Deformation Processing	(3)
539	Nuclear Metallurgy	(3)
541	Advanced Extractive Metallurgy	(3)
544	Introduction to Non-Destructive Testing	(3)
550	Corrosion	(3)
551	Advanced Chemical Metallurgy	(3)
552	Polymeric Materials	(3)
553	Thermodynamics of Polymer Systems	(3)
566	Crystallography and X-ray Metallography	(4)
599	Topics in Metallurgical Engineering and Materials Science	(2-3)

PREREQUISITE FOR GRADUATE WORK:

Students desiring any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. Degrees offered are a Master of Science in Metallurgical Engineering and a Doctor of Philosophy in Physical Metallurgy.

632	Advanced Materials Science	(3)
633	Special Purpose Alloy Steels	(3)
635	Advanced Mechanical Metallurgy	(3)
636	Dislocation Theory	(3)
637	Materials Engineering	(3)
641	Advanced Production Metallurgy	(3)
650	Advanced Materials Thermodynamics	(3)
659	Advanced Phase Diagrams	(3)
661	Advanced Physical Metallurgy I	(3)
662	Advanced Physical Metallurgy II	(3)
663	Theoretical Structural Metallurgy	(3)
666	Diffraction Methods in Metallurgy	(4)
768	Residence Credit for the Master's Degree	(1-3)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Seminar	(0)
781	Special Problems, Literature and Laboratory	(1-3)
782	Special Problems, Literature and Laboratory	(3)
801	Consumer Materials and Product Liability	(3)

MICROBIOLOGY

Graduate Faculty: Professors M.I.H. Aleem, E.W. Chick, S.F. Conti (Director of Graduate Studies), D. Goldenberg, J.C. Humphries, H.E. Swim and R.F. Wiseman. Associate Professors N.L. Goodman and D.O. Harris

Associate Members: Associate Professors D.S. Bauman, Albert Brown, T.C. Gray, T. Lillich and T.L. Roszman. Assistant Professors B.H. Brownstein, R. Bridges, J.D. Clark, M. Crandall, A.D. Hitchins, J.A. Lesnaw, D.B. Shah, and C.D. Smith.

The graduate program in Microbiology offers the Master of Science and Ph.D. de-

gree in the various fields of morphology and physiology of microorganisms, immunology and medical and public health microbiology. Areas of research specialization include Microbial Biochemistry and Bioenergetics, Virology, Ecology, Microbial Genetics, Taxonomy, Gnotobiotics (germ-free animal research), Microbial Ultrastructure and Medical Mycology.

Plan B is permitted. All graduate students including those under Plan B are required to engage in graduate-level research.

(See courses in Biology)

SCHOOL OF MUSIC

Graduate Faculty: Professors Joe Buttram (Chairman), Hubert Henderson, Donald Ivey, Rey M. Longyear, Wesley K. Morgan (Director of Graduate Studies), Nathaniel Patch, Lucien Stark, Kenneth Wright. Associate Professor Joseph Baber.

Associate Members: Assistant Professors Richard Domek, William Prizer, Thomas Tunks, and Cecilia Wang.

Adjunct Professors: Carl-Werner Guempel (UL), Gerhard Herz (UL), Robert Weaver (UL).

The School of Music offers the Master of Arts (M.A.) in musicology or theory; Master of Music (M.M.) in performance, theory, composition, or music education; Doctor of Musical Arts (D.M.A.) in theory, music education, or performance; and the Doctor of Philosophy (Ph.D.) in musicology. The applicant for the master's degree is expected to have earned an appropriate undergraduate degree at the University of Kentucky or an equivalent degree from a comparable institution.

Entrance Requirements

Entrance examinations in theory, music history and literature, and the proposed field of specialization are required of all applicants before admission to graduate programs in music. Graduates of, or students currently enrolled at the University of Kentucky are not exempt from this requirement. Those seeking a degree in performance must audition as well. Entrance examinations and auditions are held three times each year for those wishing to enroll the following fall semester: the last Saturday of January, and the second Saturday of March and July. For those wishing to enroll in the spring semester, examinations and auditions will be held the second Saturday in November.

The Director of Graduate Studies must be notified at least four weeks in advance of the date chosen by the applicant.

Note: Persons not applying for financial assistance may choose any of the above dates. Persons applying for Non-Service Fellowships must take the examinations (and the audition if applicable) on the last Saturday of January. Those applying for teaching assistantships may choose the last Saturday of January or the second Saturday of March. Those wishing to begin studies during a summer session must take the examinations no later than the second Saturday of March.

In cases of extreme hardship, arrangements may be made with the Director of Graduate Studies to take entrance examinations in *absentia* and to send audition tapes. (Does not apply to D.M.A. candidates.)

GENERAL REQUIREMENTS FOR MASTER'S DEGREE

Foreign Language Requirements. The Master of Arts degree requires a reading knowledge of one foreign language, preferably French or German. Voice majors must have completed one year of study in each of two modern foreign languages.

Thesis Requirements. The Master of Arts degree requires a thesis (Plan A). A public recital acceptable to the faculty is required in lieu of a thesis for the Master of Music degree in Performance. A composition of major proportions, acceptable to the composition-theory faculty and publicly performed, must be submitted in lieu of a thesis by candidates for the Master of Music degree in Composition. A thesis is optional (Plan A or Plan B) in the Master of Music in Music Education or Theory. Twenty-four hours are required with a thesis or 30 hours without a thesis.

A final comprehensive examination is required for each program.

MASTER OF ARTS (MUSIC)

Prerequisites: A suitable background in music literature and music theory, and a reading knowledge of one foreign language, normally French or German.

MUSICOLOGY EMPHASIS

Music History and Literature	9-12
Theory (including MUS 671)	5-8
Research Methods (MUS 618)	3
Directed Electives	2-8
Thesis	0
Total	24

THEORY EMPHASIS

Theory (including MUS 671 and MUS 672)	9-12
Music History and Literature	6-8
Research Methods (MUS 618)	3
Directed Electives	2-8
Thesis	0
Total	24

MASTER OF MUSIC (THEORY)

Prerequisites: Ten hours of upper division theory, including form and analysis and counterpoint, or the equivalent.

Theory (including MUS 578 or 671 and 672)	10
Research Methods (MUS 618)	3
Music History and Literature	6
Pedagogy of Theory (674, 675)	4
Directed Electives	1-7
Thesis (if desired)	0
Total	24-30

The student may either prepare a thesis or take six additional hours of Theory, Composition, or Music History and Literature courses for a total of 30 hours of course work.

MASTER OF MUSIC (COMPOSITION)

Prerequisites: Submission of three original compositions.

Advanced Composition (MUS 673)	4
Music History and Literature	6
Theory (including MUS 578 and/or 671)	8
Directed Electives	6
Thesis Composition	0
Total	24

The thesis composition must be publicly performed. The student is responsible for the preparation of legible score and parts.

MASTER OF MUSIC (PERFORMANCE)

Prerequisites: Acceptance by the appropriate faculty of applied music.

Applied Music (including recital)	9
Music History and Literature	6
Theory (including MUS 578 or 671)	4
Directed Electives	11
Recital	0
Total	30

This degree program is offered in the following 14 performance areas: piano, voice, organ, violin, viola, cello, flute, oboe, clarinet, trumpet, french horn, trombone, tuba, and harpsichord.

Wind and string majors must participate in at least one University-sponsored performing organization for two semesters. A minimum of three full semesters, excluding summer sessions, is necessary for an M.M. in Performance.

MASTER OF MUSIC (MUSIC EDUCATION)

Plan I*

History and Philosophy of Music Education (MUS 751)	3
Supervision and Administration of School Music (MUS 750)	3
Music Education Electives	6
Applied Music (500 Level)	6
Major Instrument	2-2
Minor Instrument	1-1
Research Methods (MUS 617)	3

Music History and Theory (including MUS 578 or 671)	6
Electives in Music or Education	3
Total	30

Plan II*

History and Philosophy of Music Education (MUS 751)	3
Supervision and Administration of School Music (MUS 750)	3
Music Education Electives	6
Applied Music (500 Level)	3
Research methods (MUS 617)	3
Theory (including MUS 578 or 671)	4
Music History and Literature	6
Electives	2
Total	30

Plan III*

History and Philosophy of Music Education (MUS 751)	3
Supervision and Administration of School Music (MUS 750)	3
Music Education Electives	3
Applied Music (500 Level)	3
Research Methods (MUS 617)	3
Music History and Theory (including MUS 578 or *71)	6
Electives	3
Thesis	0
Total	24

*Students planning to earn the doctorate in Music Education should elect Plan II or III.

Each full-time resident graduate student in music education must participate in a University-sponsored performing organization for two semesters.

DOCTOR OF MUSICAL ARTS DEGREE

The D.M.A. program offers opportunities for fullest professional development as a specialist or teacher in the following fields: Music Education, Theory, and Applied Music.

The applicant for this program should have had at least two years teaching experience. One foreign language, normally French or German, is required. The student must also demonstrate a working knowledge of music terms in French, German, and Italian by a special examination given prior to the qualifying examination.

One lecture-recital and two formal recitals are required for the D.M.A. degree with applied music as a major. The program content of these recitals will be established in cooperation with the student's special committee no later than by the end of the third semester of work leading toward this degree. One recital must precede the qualifying examinations.

The minimum core requirements for the D.M.A. beyond the bachelor's degree are as follows:

Music History and Literature	12
Music Theory	8
Research Methods:	
D.M.A. in Applied Music or	
Theory (MUS 618)	3
D.M.A. in Music Education (MUS 617)	3
Minor Outside Department	9
Courses in Area of Specialization	(at least) 15

The minor to be taken outside the School of Music is subject to the approval of the student's committee and the chairman of the department concerned.

The dissertation for the D.M.A. degree will be concerned with matters dealing with theory of theoretical subjects, and/or a pedagogical or historical orientation toward the area of the student's interest. The dissertation must be the result of original research and must add to, or modify what has been previously known on the subject. (See the dissertation requirements for the Doctor of Philosophy degree.)

DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy is offered in historical musicology. This is a humanistic discipline drawing upon various research methods necessary to the discovery, correlation, appraisal, and exposition of music and musical criteria from any given stylistic era or eras. The musicologists must be skilled not only in research methods and techniques, but in the teaching and performance of music as well.

Prerequisites for admission. Every applicant must submit evidence of strong undergraduate preparation in music, including performance and music theory as well as in music history, and should have at the time of entrance a reading knowledge of at least one foreign language, preferably German. The applicant must also provide at least two letters of recommendation from members of the music faculty where the undergraduate or Master's level work was undertaken. The applicants must provide evidence of competence in research and writing. Those holding or earning a baccalaureate degree should present at least one term paper or the equivalent. Applicants with Master's degrees must submit the M.A. thesis. If the applicant has not completed a Master's degree including a thesis, a research paper of acceptable scope and quality plus a major research project undertaken as part of work done at the Uni-

versity of Kentucky (or the University of Louisville) must be submitted. During the first year of residence as a doctoral student, the student must demonstrate acceptable keyboard proficiency and ability in solo or ensemble performance.

Language requirements. The basic foreign language requirements for the Ph.D. in musicology are German and either French or Italian. The basic requirements must be completed no later than the end of the first year of doctoral study. The student is also responsible for mastery of other languages (e.g., Latin, Spanish, Russian) if they are necessary for preparing the dissertation.

Course requirements.

Research Methods (MUS 618 at UK; MusH 569 at UL);

Renaissance Notation (MUS 701 at UK; MusH 583 C and D at UL).

Six hours of graduate level advanced analysis (MUS 671-72 at UK; Mus 647-648 and MusH 583 A, B, C, or D at UL);

A minimum of three seminars or special courses (MUS 702 or 718 at UK; MusH 670, 680, or 682 at UL);

An outside minor in a field related to musicology outside the School of Music. Normally this involves three courses. At the discretion of the student's special committee, the outside minor may be interdisciplinary. Active participation (performing, editing, or both) in Collegium Musicum for a minimum of two semesters is strongly recommended.

Admission to doctoral candidacy. The qualifying examination must be taken no later than one semester after the completion of course work.

A student is not a doctoral candidate in musicology until a reading knowledge of two modern foreign languages has been demonstrated and the qualifying examination has been passed.

MUSIC PERFORMANCE COURSES

All music performance courses may be repeated three times for credit.

All music performance courses carry from one to four credits during the fall and spring semesters. (Applied music offerings during the summer are limited.)

Piano	501, 601
Voice	502, 602
Organ	503, 603
Violin	504, 604
Viola	505, 605

Cello	506, 606
String Bass	507, 607
Flute	508, 608
Oboe	509, 609
Clarinet	510, 610
Bassoon	511, 611
Trumpet	512, 612
French Horn	513, 613
Trombone	514, 614
Baritone	515, 615
Tuba	516, 616
Saxophone	517, 617
Percussion	518, 618
Harp	519, 619
Harpsichord	520, 620
Viol	521, 621
Historical Instruments	522, 622

MUC 570 Advanced Chamber Music

Ensemble	(1)
MUC 596 Opera Workshop	(1-3)
500 Music of the Middle Ages	(3)
501 Music of the Renaissance	(3)
502 Music of the Baroque Era	(3)
503 Music of the Classic Period	(3)
504 Music of the 19th Century	(3)
505 Music of the 20th Century	(3)
506 History of American Music	(3)
507 Venetian Music of the Renaissance	(3)
508 Venetian Music of the Baroque	(3)
520 Vocal Solo Literature	(3)
521 Organ Literature	(3)
522 Piano Literature	(3)
524 String Literature	(3)
530 Collegium Musicum	(1-3)
561 Current Practices in Elementary and Secondary School Music	(2)
565 Vocal Pedagogy	(2)
566 Piano Pedagogy	(3)
568 General Music in the Secondary School	(2)
570 Orchestration	(2)
571 Orchestration	(2)
572 Counterpoint	(2)
573 Counterpoint	(2)
574 Composition	(2)
575 Composition	(2)
578 Analytical Techniques	(2)
601 History of Performance Practices	(3)
617 Research Methods	(3)
618 Research Methods	(3)
620 Advanced German Vocal Literature	(3)
621 Advanced Vocal Literature	(3)
622 Symphonic Literature	(3)
623 Opera Literature	(3)
624 Chamber Music Literature	(3)
625 Choral Literature	(3)
650 Music Education Workshop	(1-4)
671 Advanced Musical Analysis	(3)
672 Advanced Musical Analysis	(3)
673 Advanced Composition	(2)
674 Pedagogy of Theory	(2)
675 Pedagogy of Theory	(2)
677 Contemporary Music Idioms	(3)
700 Medieval Notation	(3)
701 Renaissance Notation	(3)
702 Seminar in Musicology	(3)
703 Studies in Music History	(2)
718 Doctoral Seminar	(3)
719 Independent Work in Musicology	(1-3)
750 Administration and Supervision of Public School Music	(3)

751	History and Philosophy of Music Education	(3)
762	Music in Higher Education	(3)
766	Seminar in Music Education	(3)
767	Independent Work in Music Education .	(1-3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Psychology of Music	(3)
799	Independent Work in Music Theory ...	(1-3)

NURSING

Graduate Faculty: Professors Loretta Denman, Juanita Fleming (Assistant Dean, Director of Graduate Studies), Jean Hayter, Marion McKenna (Dean), Associate Professors Elizabeth Bear, Frances Thomas.

Associate Members: Professor Virginia Lane, Associate Professors Claudine Gartner, Melva Jo Hendrix, Beth Hicks, Dorothy Luther.

Master of Science in Nursing requires a minimum of 34 credit hours for both Plan A or Plan B. Independent work in nursing for credit may be arranged through individual student-teacher determination in some instances. Basic requirements include a minimum of 10 hours in advanced clinical nursing, a systematic inquiry in nursing course, the first course in Clinical Teaching and Supervision in Nursing, and Concepts and Theories in Nursing Course. In addition, each student will be expected to pass a final examination and to complete either a clinical project or a thesis.

The objective of the nursing program is to prepare students for clinical, administrative and/or academic leadership positions in nursing. The clinical component is the major focus of the graduate curriculum and constitutes the core of knowledge for nursing at the master's level. The functional component differs depending on the career goal of the individual, and may consist of preparation for teaching, administration, scientific investigation or the clinical nurse specialist role. Currently the clinical concentrations offered include family nurse practitioner, medical-surgical nursing, nurse-midwifery, pediatric nursing and psychiatric-mental health nursing.

All students are required to take a minimum of 20 credits in nursing courses including core courses. Increasing opportunity will be given students to study the application of core content to a particular field of interest, and to further define the nursing content unique to that field. Faculty have diverse clinical backgrounds which will enable this type of exploration to take place. Nursing will be studied in all its

settings: school, community and all types of health agencies. Involvement of the student in the educational program will be facilitated by encouraging and guiding students in pursuit of areas in which they have special interest. Elective courses in nursing are available.

The general University requirements for admission to The Graduate School will apply. Applicants to the Master's program of the College of Nursing will be expected to take the aptitude portion of the Graduate Record Examination prior to acceptance in the program.

The minimal acceptable score on the GRE is 800. The minimal grade-point average is 2.5. Graduation from a National League for Nursing accredited baccalaureate degree program and current nurse licensure are required. Graduate students selecting the nurse/mid-wifery concentration are required to have two years of relevant experience in nursing prior to admission. Students electing the family nurse practitioner major must have at least one year of clinical practice in a relevant area immediately prior to admission. Enrollment is limited; therefore, all students will be selected on the basis of over-all qualification. Eligibility for admission to The Graduate School does not insure admission to the nursing program. Personal interviews will be arranged for each applicant.

For further information contact the Director of Graduate Studies.

543	Gerontologic Nursing	(3)
554	Identification and Management of Common Health Problems	(3)
558	Family Assessment, Health Teaching, and Clinical Counseling	(2)
560	Nursing Management of Exceptional Children	(3)
610	Concepts and Theories in Nursing*	(3)
612	Systematic Inquiry in Nursing	(3)
614	Practicum in Clinical Nursing I	(2-4)
615	Practicum in Clinical Nursing II	(2-4)
616	Practicum in Clinical Nursing III	(2-4)
620	Problems in Clinical Nursing	(2-6)
622	Nursing Administration	(3)
623	Practicum in Clinical Teaching or Supervision in Nursing	(1-4)
624	Clinical Teaching and Supervision in Nursing I	(1)
625	Clinical Teaching and Supervision in Nursing II	(1)
626	Clinical Teaching and Supervision in Nursing III	(1)
630	Clinical Nursing II	(6)
650	Physical and Health Assessment	(4-6)
660	Basic Nurse-Midwifery I**	(6)
662	Family Nurse Clinical Practicum I	(4-6)
670	Basic Nurse-Midwifery II**	(6-9)
672	Family Nurse Clinical Practicum II	(4)

682	Family Nurse Internship	(6)
768	Residence Credit for Master's Degree ...	(1-6)
770	Seminar in Clinical Nursing I	(2)
771	Seminar in Clinical Nursing II	(2)
772	Seminar in Primary/Ambulatory Care ...	(2)
781	Independent Study in Nursing	(1-3)

* Required of all students.

** Required of all midwifery students.

NUTRITION AND FOOD SCIENCE

Graduate Faculty: Professors Abby Marlatt (Director of Graduate Studies), Donald Oberleas, Leonard Packett, Associate Professors Linda H. Chen and Jose Concon.

Associate Members: Associate Extension Professors Sherrell B. Foree; Fudeko T. Maruyama, Assistant Professors Ching K. Chou, Ralph Lane.

Graduate majors in Nutrition, Food Science and Dietetics lead to the degree of Master of Science in Home Economics. For more information see Home Economics.

503	Community Nutrition	(3)
505	Experimental Foods	(3)
507	Workshop in Applied Nutrition	(2)
508	Seminar in Nutrition	(1)
512	Normal and Therapeutic Nutrition	(5)
514	Food Preservation	(3)
516	Food For Children	(3)
517	Food for Special Occasions	(3)
540	The School Lunch	(3)
542	Institution Equipment	(3)
546	Institution Organization and Management	(3)
548	Institution Administration	(3)
560	Food and the Consumer	(3)
590	Field Work in Nutrition	(1)
591	Special Problems in Foods and Nutrition	(1-3)
594	Special Problems in Institution Management	(1-3)
603	Advanced Community Nutrition	(3)
610	Human Nutrition I	(4)
660	Nutritional Implications of Toxicants in Foods	(3)
768	Residence Credit for the Master's Degree	(1-6)
771	Seminar in Nutrition	(2)
781	Special Problems in Foods and Nutrition	(1-3)
784	Special Problems in Institution Management	(1-3)

PATHOLOGY

Graduate Faculty: Professors David Goldenberg, Jesse Siskin and Daniel Weiss.

While there is as yet no graduate program in pathology the Department offers two courses which are open to qualified graduate students. The permission of the department chairman is required prior to enrollment.

421	Fundamental Human Pathology	(4)
422	Systemic Human Pathology	(7)

PHARMACEUTICAL SCIENCES

Graduate Faculty: Professors Patrick DeLuca, George Digenis, Lewis Dittert, Harry Kostenbauder (Director of Graduate Studies), Charles Lesshaft, Harry Smith, Joseph Swintosky (Dean), Associate Professors Louis Diamond, Lawrence Hurley, Anwar Hussain, Milton Kornet, William Lubawy, James Munson.

Associate Members: Associate Professors Joyce Garrett, Randall Smith.

The College of Pharmacy offers M.S. and Ph.D. programs in Pharmaceutical Sciences, with concentration in areas of pharmaceuticals and pharmaceutical chemistry such as physical pharmacy, pharmaceutical technology, biopharmaceutics and pharmacokinetics, pharmaceutical analysis, radiopharmacy, medicinal chemistry and natural products chemistry.

The M.S. degree is offered under a modification of Plan A which permits students to take approximately one-half of their courses in work areas outside the major area. Plan B may be employed only in exceptional cases.

The language requirement for both the M.S. and Ph.D. degrees is a reading knowledge of one foreign language chosen from French, German, or Russian.

Subject to some substitution at the recommendation of the candidate's committee, courses considered basic to the Ph.D. program are CHE 440, 532, 533, 538, 548, 633, MA 481, STA 670. Superimposed upon this base it is expected that the student will take graduate level courses within the major area of interest from the courses listed in Pharmacy.

For regular admission to graduate study in Pharmaceutical Sciences a student should have a sound background in pharmacy, chemistry and biology, with a mastery of mathematics through calculus. Applicants lacking basic requirements in these areas will be required to make up such deficiencies by taking undergraduate courses for non-graduate credit.

400	Biochemistry	(4)
404	Chemistry of Medicinal Products	(3)
406	Chemistry of Medicinal Products	(3)
450	Pharmacology and Toxicology	(5)
462	Pharmacology and Toxicology	(5)
474	Independent Problems in Toxicology	(1-3)
475	Independent Problems in Pharmacognosy	(1-3)
476	Independent Problems in Pharmacology	(1-3)
510	Modern Methods in Pharmaceutical Analysis	(5)
530	Practice of Radiopharmacy	(3)

540	Industrial Pharmaceutical Technology	(4)
545	Sterile Parenterals and Devices	(2-3)
612	Quantitative Pharmacodynamics	
	Pharmacokinetics	(2)
620	Natural Products Chemistry	(3)
622	Advanced Biopharmaceutics	(2)
624	Biotoxicology	(3-5)
630	Pharmaceutical Rate Processes	(3)
631	Equilibrium Phenomena in Pharmaceutical Systems	(3)
632	Pharmaceutical Disperse Systems	(3)
640	Advanced Pharmaceutical Chemistry I	(3)
642	Advanced Pharmaceutical Chemistry II	(3)
760	Topics in Pharmaceutical Sciences	(2-4)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
776	Seminar in Pharmaceutical Sciences I	(1)
778	Seminar in Pharmaceutical Sciences II	(1)
780	Special Problems in Pharmaceutical Sciences	(1-6)
790	Research in Pharmaceutical Sciences	(1-12)

PHARMACOLOGY

Graduate Faculty: Professors T.Z. Csaky, Donald F. Diedrich, K.C. Huang*, William R. Martin (Chairman), Douglas Reese, T.G. Scharff*, Abraham Wikler. Associate Professors James W. Flesher (Director of Graduate Studies), Ralph E. Miller.

Associate Members: Assistant Professors John Dougherty, Donald Jasinski.

*Joint appointment with University of Louisville.

The Department of Pharmacology offers M.S. and Ph.D. degrees in Pharmacology.

Pharmacology is the study of drugs. Pharmacologists in modern society find careers as teachers, as scientists engaged in research of problems related to developing new drugs, evaluating drugs for their efficacy and toxicity, as well as studying mechanisms of action.

Graduates from accredited colleges with bachelor degrees in the biological sciences, in chemistry, physics or pharmacy or with professional degrees in medicine, dentistry, veterinary medicine or pharmacy are eligible for candidacy for graduate degrees in pharmacology. It is advisable that the candidates have good basic training in mathematics, physics, chemistry and biological sciences. A major part of the Ph.D. program involves independent research under the direction of a member of the graduate faculty. Training can be obtained in neuropharmacology, psychopharmacology, drug metabolism, carcinogenesis, receptor mechanism, toxicology, neuroendocrinology, cardiovascular pharmacology and problems related to drug abuse.

There is also a combined M.D./M.S. (in

pharmacology) program available.

Only one modern foreign language is required for the Ph.D. degree in Pharmacology.

Inquiries concerning the details of the program as well as possible financial support for graduate students should be addressed to the Chairman of the Department of Pharmacology.

There is available a joint program in Pharmacology between the University of Kentucky and the University of Louisville. Inquiries relative to this program should be directed to the Department of Pharmacology.

521	General Pharmacology and Toxicodynamics	(2)
522	Systems Pharmacology	(3)
541	Biological Assay	(4)
558	Neuropharmacology	(2)
560	Whole-body Autoradiography	(2)
590	Gnotobiotic Methodology	(2)
601	Principles of Medical Pharmacology	
	Lecture*	(5)
612	Quantitative Pharmacodynamics	
	Pharmacokinetics	(2)
616	Advanced Pharmacology*	(4)
621	Advanced Pharmacodynamics	(4)
622	Pharmacology of Organs and Systems	(2)
632	Principles of Pharmacology, Laboratory	(2)
634	Pharmacology of Cardiovascular Drug Therapy	(3)
641	Bioassay with Human Subjects	(2)
645	Physiology and Pharmacology of Biological Membranes and Transport	(1)
650	Host-Contaminant Relationships	(2)
658	Advanced Neuropharmacology	(4)
660	Pharmacology of Steroids	(4)
663	Physical and Chemical Disposition of Drugs	(2)
664	Advanced Molecular Pharmacology	(2)
666	Human Pharmacology	(3)
670	Clinical Psychopharmacology	(2)
671	Integrative Psychopharmacology	(2)
672	Behavioral Pharmacology and Toxicology	(2)
750	Research in Pharmacology	(1-5)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(0-12)
770	Seminar in Pharmacology	(1)

*Will be taught, in most part, on the University of Louisville campus.

PHILOSOPHY

Graduate Faculty: Professors Michael Bayles (Director of Graduate Studies), Jesse DeBoer, Dallas High. Associate Professors Daniel Breazeale, Ronald Bruzina, James Manns, Thomas Olshewsky (Acting Chairman), Alan Perreiah.

Associate Members: Assistant Professors Kenneth Henley, Henry Schankola.

The Department of Philosophy offers courses of study leading to a Master of Arts degree under both Plan A and Plan B. The Department admits students who wish

to terminate their philosophical study at the M.A. level as well as those who view it as preparatory to pursuit of the Ph.D. (At present the Department does not offer this degree.) The Department does not require an undergraduate major in philosophy as a prerequisite to the graduate program; indeed, it is interested in students with a broad background in other disciplines. However, remedy for deficient background in history of philosophy and logic must be undertaken upon entrance to the program.

A reading knowledge of one foreign language is required for the master's degree.

418	Existentialism	(3)
440	Great Religions	(3)
518	Representations of Nature	(3)
520	Intermediate Logic	(3)

GROUP A

504	Topics in the History of Ancient and Medieval Philosophy	(3)
509	Topics in the History of Modern Philosophy	(3)
513	Nineteenth Century Philosophy	(3)
514	American Philosophy	(3)
515	Contemporary Analytic Philosophy	(3)
516	Phenomenology	(3)

GROUP B

530	Ethical Theory	(3)
535	Social and Political Philosophy	(3)
537	Philosophy of Law	(3)
545	Philosophy of Religion	(3)
592	Aesthetics	(3)

GROUP C

550	Metaphysics	(3)
555	Epistemology	(3)
560	Philosophy of Science	(3)
562	Philosophy of the Social Sciences	(3)
565	Philosophy of Language	(3)
570	Philosophy of History	(3)
575	Philosophy of Mind	(3)

GRADUATE SEMINARS

625	Advanced Logic	(3)
680	Special Topics in Philosophy	(3)
700	Seminar in Ancient Philosophy	(3)
705	Seminar in Medieval Philosophy	(3)
710	Seminar in Modern Philosophy	(3)
715	Seminar in Recent Philosophy	(3)
768	Residence Credit for the Master's Degree	(1-6)
790	Research in Philosophy	(3)

PHYSICS AND ASTRONOMY

Graduate Faculty: Professors Lewis Cochran, Wendell DeMarcus, Fletcher Gabbard (Chairman and Director of Graduate Studies), Ben Gossick, Richard Hanau, George Hurst (Adjunct), Bernard Kern, Wasley Krogdahl, Guy Lehman, Marcus McEllistram, Clastine Van Winter, Jesse Weil, Associate Professors

Jerry Brandenberger, John Christopher, Marcel Coz, Alan MacKellar, Robert Knight, M.G. Payne (Adjunct), Rudolph Schriels, Robert Stokes, J.P. Straley.

Associate Member: Assistant Professor F.O. Clark.

The Department of Physics and Astronomy offers courses and research options leading to the Ph.D. degree in the special areas of astronomy and astrophysics, atomic and molecular physics, nuclear physics, and solid-state and condensed matter physics, and leading to the M.S. degree in these areas and also in the special area of optics. Excellent laboratory facilities and library materials are available. A major experimental facility is the six-million volt Van de Graaff accelerator. More detailed descriptions of each of these options will be sent on request.

Plan A or Plan B may be used to satisfy the requirements for the M.S. degree

The M.S. program emphasizes applied physics and students are encouraged to take courses in related areas such as engineering and biology when such courses fill a need in their academic objectives.

Candidates for the M.S. degree must demonstrate that they have the equivalent of four semesters of college level work in one modern foreign language.

The Ph.D. degree is a research degree granted on the basis of broad knowledge of physics and in-depth study in a specific area leading to a thesis reflecting original work by the doctoral candidate. A comprehensive examination is given to all students and a passing score on this examination admits a student to candidacy for the Ph.D. degree.

To be admitted to candidacy for the Ph.D. degree, students must demonstrate a reading knowledge in one foreign language and present evidence that they have passed the equivalent of four college semesters of work in a second foreign language. Students without previous work in foreign language must pass a proficiency examination in two foreign languages or demonstrate fluency in one language. French, German, or Russian are acceptable languages; others may be used by special permission.

Candidates for Doctoral degrees may perform their thesis research work at the Lexington Campus of the University of Kentucky or arrangements may be made to do this work at other institutions or laboratories such as the Oak Ridge National Laboratory, the National Astronomical Radio Observatory or other places by spe-

cial arrangement. A wide range of facilities is available in the fields of astronomy and astrophysics, atomic and molecular physics, nuclear physics, and solid state and condensed matter physics. Theoretical work is being pursued in all of these areas.

PHYSICS

400	Special Topics in Physics and Astronomy	(1-3)
401	Special Topics in Physics and Astronomy for Elementary and High School Teachers	(2-4)
402	Electronic Instrumentation and Measurements	(3)
404	Mechanics	(3)
416	Electricity and Magnetism	(3)
417	Electricity and Magnetism	(3)
472	Interaction of Radiation with Matter	(3)
504	Advanced Mechanics	(3)
508	Optics	(3)
510	Spectroscopy	(3)
512	Experimental Physics: Electricity and Magnetism	(2)
514	Electronics	(3)
520	Introduction to Quantum Mechanics	(3)
522	Heat and Thermodynamics	(3)
524	Solid State Physics	(3)
525	Solid State Physics	(3)
530	Experimental Physics: Spectroscopy	(2)
535	Experimental Physics: Atomic and Nuclear	(2)
538	Experimental Physics: Light	(2)
545	Radiation Hazards and Protection	(2)
546	General Medical Radiological Physics	(2)
547	Medical Radiation Imaging—I, Physical Aspects of Diagnostic Radiology	(2)
548	The Physics of Radiation Therapy	(2)
549	The Physics and Instrumentation of Nuclear Medicine	(3)
554	Fundamental Atomic Physics	(3)
555	Fundamental Nuclear Physics	(3)
567	Introduction to Lasers and Masers	(3)
600	Selected Topics in Advanced Physics	(2-3)
604	Classical Mechanics	(3)
611	Electromagnetic Theory I	(3)
613	Electromagnetic Theory II	(3)
624	Theory of the Solid State	(3)
625	Theory of the Solid State	(3)
629	Nuclear Physics I	(3)
630	Nuclear Physics II	(3)
631	Atomic Structure	(3)
632	Statistical Mechanics	(3)
639	Theoretical Astrophysics	(3)
640	Theoretical Astrophysics	(3)
650	Theory of Relativity	(3)
652	Theory of Elementary Particles	(3)
682	Electric Phenomena in Gases	(3)
706	Methods of Mathematical Physics	(3)
714	Quantum Mechanics I	(3)
715	Quantum Mechanics II	(3)
716	Advanced Quantum Mechanics	(3)
755	Topics in Chemical Physics (Subtitle Required)	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Colloquium	(1)
781	Independent Work in Physics	(3)
790	Research in Physics	(3)
791	Research in Physics	(3)

ASTRONOMY

400	Special Topics in Physics and Astronomy	(1-3)
492	Galactic Astronomy II	(3)
495	Elementary Astrophysics I	(3)
496	Elementary Astrophysics II	(3)
591	Cosmology I	(3)
592	Cosmology II	(3)

PHYSIOLOGY AND BIOPHYSICS

Graduate Faculty: Professors James Archdeacon, Louis Boyasky, Joseph Engelberg, Donald Frazier, Ward Griffen, Henry Hirsch, Jesse Siskin, Mirosolava B. Winer, Fred Zechman (Chairman). Associate Professors Eugene Crawford, Bertram Peretz, Daniel Richardson (Director of Graduate Studies), Gerald I. Roth, P.A. Thornton, David R. Wekstein, James Zolman. Assistant Professor David Randall.

Associate Members: Assistant Professor Cobeen E. Ott.

The graduate program, which offers both the M.S. and Ph.D. degrees is designed to educate and train students to be competent research scientists and teachers of physiology and biophysics. The specific objectives are to provide students with: (1) an environment which promotes independent development and habits of lifelong scholarship, (2) a broad base of knowledge of the principles of molecular, cellular and organ-system physiology and biophysics, (3) the capacity to carry out independent research in an area of physiology or biophysics and, (4) experience and training in the teaching of physiology and biophysics.

To fulfill these objectives the program combines formal course work, independent reading, interaction with scholars at the tutorial level, and independent research including a dissertation.

Admission to the graduate program is competitive and is based upon academic background, professional recommendations, performance on the Graduate Record Examination, experience, and when possible, personal interviews. In general, one year of biology and physics, two years of chemistry, and mathematics through calculus are required. A course in statistics is strongly recommended.

In conjunction with the Colleges of Medicine and Dentistry the Department will consider for admission those qualified students who wish to pursue a combined professional and graduate program. In addition, special programs may be developed in biophysics and biomedical engineering.

Inquiries should be addressed to the Director of Graduate Studies.

502	Principles of Physiology Lecture	(4)
503	Experimental Methods	(2)
504	Independent Work in Physiology	(2-4)
507	Introduction to Endocrinology	(3)
511	Medical Physiology	(7)
512	Cellular Physiology	(3)
520	Theoretical Biophysics	(3)
522	Mathematical Biophysics	(3)
549	Comparative Endocrinology	(3)
602	Physiological Instrumentation I	(3)
603	Physiological Instrumentation II	(3)
604	Advanced Cardiovascular Physiology	(3)
606	Advanced Neurophysiology	(3)
627	Proseminar in Physiological Psychology	(2)
630	Advanced Topics in Physiology and Biophysics	(1-3)
660	Systems Physiology	(3)
767	Seminar in Physiological Psychology	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Proseminar in Cell Physiology and Biophysics	(2)
772	Proseminar in Mammalian Physiology	(2)
774	Graduate Seminar in Physiology	(1)
791	Research in Physiology	(1-15)

PLANT PATHOLOGY

Graduate Faculty: Professors R.A. Chapman, Stephen Diachun (Chairman and Director of Graduate Studies), J.W. Hendrix, Joseph Kuc, T.P. Pirone, John G. Shaw, M.R. Siegel, G.W. Stokes, H. Wheeler. Associate Professors Said Ghabrial, Louis Shain, S.J. Sheen.

The department offers work leading to the M.S., M.S. in Agriculture, and Ph.D. degrees. For the Ph.D. degree individual programs of study must conform with the requirements established by The Graduate School; proficiency in one foreign language is required; a minor is not required.

401	Agri-Chemicals in Pest Management	(3)
410	Forest Pathology	(3)
503	Plant Biochemistry	(3)
543	Diseases of Plants	(3)
545	Epidemiology and Control of Plant Diseases	(3)
558	Nematode Diseases of Plants	(3)
575	Plant Pathology	(3)
640	Identification of Plant Diseases	(3)
652	Plant Pathogenic Fungi	(3)
656	Virus Diseases of Plants	(4)
660	Physiology of Plant Diseases	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Plant Pathology Seminar	(1)
784	Special Problems in Plant Pathology	(1-3)
784	Research in Plant Pathology	(1-4)

PLANT PHYSIOLOGY

Director of Graduate Program: James Leggett.

Graduate Faculty: Professors L.P. Bush, G. Cheniae, D.L. Davis, A.J. Hiatt, M.J. Kasperbauer, J. Kuc, J.E.

Leggett, R.G. Lockhard, H.E. Wheeler. Associate Professors T.R. Kemp, R.H. Lowe, Gerald Rosenthal.

The University-wide, interdepartmental graduate program in Plant Physiology offers a plan of study leading to the Master of Science and Doctor of Philosophy degree. The aim of this program is to aid students in developing a high degree of excellence in plant physiology. Students in plant physiology will acquire academic backgrounds embracing basic areas of biology, chemistry, physics, and mathematics. These courses provide the foundation for delving into various areas of plant physiology.

Faculty members of the program are plant physiologists from the Thomas Hunt Morgan School of Biological Science in the College of Arts and Sciences and the Departments of Agronomy, Forestry Horticulture, and Plant Pathology in the College of Agriculture. Areas of research pursued by the faculty members include plant growth and development, senescence, physiology of crop yield, metabolism and synthesis of alkaloids and steroids, photo-periodic responses, mineral nutrition, membrane ultra-structure, dwarfing mechanisms, propagation, the mechanism of action and metabolic fate of fungicides and herbicides.

Course offerings in plant physiology are co-listed under the Thomas Hunt Morgan School of Biological Science and Departments of Agronomy, Horticulture, and Plant Pathology. Plant Physiology utilizes courses in the Departments of Biochemistry, Chemistry, Mathematics, and Statistics as supporting courses to suit the needs and interests of the individual student.

A program leading to the Doctor of Philosophy degree must conform to the general rules and regulations of The Graduate School. Reading proficiency in one foreign language is required, usually German, Russian, or French. A formal minor is not required. Contact the Director, N122N, Agricultural Science Center-North for additional information.

501	(BOT) Plant Physiology	(3-5)
630	(AGR, BIO) Experimental Techniques in Plant Physiology	(3)
660	(PPA) Physiology of Plant Disease	(3)
701	(BOT) Plant Metabolism	(3)
732	(AGR, BOT, HOR) Mineral Nutrition of Plants	(3)
734	(AGR, BOT, HOR) Physiology of Growth and Development	(3)
769	(BIO) Residence Credit for the Doctor's Degree	(0-12)
771	(BIO) Seminar in Plant Physiology	(1)

POLITICAL SCIENCE

Graduate Faculty: Professors Vincent Davis, Dean Jaros (Director of Graduate Studies), Malcolm Jewell, Sidney Ulmer. Associate Professors Michael L. Baer (Chairman), Bradley Canon (Chairman), Kenneth Coleman, Maurice East, George Gadbois, William Lyons, Herbert Reid, Kenneth Vanlandingham, John Wanat and Ernest Yanarella.

Associate Members: Assistant Professors Richard Elling, Karen Mingst, John Patterson, Phillip Roeder.

Candidates for admission to the graduate program in political science must provide the information required by The Graduate School and must also submit at least two letters of recommendation from persons familiar with the applicant's academic performance. Students who do not have political science undergraduate majors are welcome in this program.

The Political Science Department offers both the M.A. and Ph.D. degrees. The M.A. degree may be earned under either of two plans: Plan A requires at least 24 hours of course work and a thesis; Plan B requires at least 30 semester hours of course work and examination in three fields of political science, or in two fields of political science and one outside field. Under either plan, the student must take at least two-thirds of the required semester hours in political science, and at least half of the political science work must be in courses open only to graduate students. A candidate for Plan B master's degree must pass a foreign language requirement or an analytical skills requirement.

The Practical Politics Option is offered under Plan B. This option features skills necessary to participate in electoral politics or in the governmental process.

The Ph.D. program is divided into a general phase and a specialized phase. Entering students spend their first year in the general phase, which includes proseminars in methodology and in at least four major fields of political science. (Students who have previously taken graduate work may be exempt from some of these proseminars.) At the end of the first year of graduate work, the student is evaluated by a departmental committee which determines whether the general phase has been satisfactorily completed.

During the specialized phase of the graduate program, the students' work is based on a program prepared with the special committee. The students take advanced work in political science and at least nine semester hours of course work in

another discipline. The qualifying examination in political science consists of two parts: the students prepare a paper on some aspect of a chosen major teaching and research field and then undergo an oral examination on the papers in particular and the major teaching and research fields in general. The examination is given by the special committee. Following this examination the students write a prospectus for the dissertation and are examined orally on this by the special committee. The students then write a dissertation and defend it in a final oral examination.

Candidates for the Ph.D. in political science are required either to demonstrate a reading knowledge of two modern foreign languages or to meet that requirement in one modern foreign language and to demonstrate proficiency in an allied field contributing to research competence in political science. Research competence may be demonstrated by successfully completing at least six hours of course work in one or more allied fields, including statistics, computer sciences, and research methods in another discipline.

Additional details concerning departmental requirements may be secured from the Director of Graduate Studies.

437	Dynamics of International Law	(3)
538	Latin American Relations	(3)
547	Micro-Theory in Political Science	(3)
420	Governments and Politics of South Asia	(3)
421	Government and Politics of Southeast Asia	(3)
430	The Conduct of American Foreign Relations	(3)
431	National Security Policy	(3)
450	Rural Local Government	(3)
539	The Foreign Policy of the Soviet Union	(3)
515	Comparative Political Parties	(3)
532	Comparative Foreign Policies	(3)
452	Municipal Government	(3)
553	Urban Government and Politics	(3)
417	Survey of Sub-Saharan Politics	(3)
411	Comparative Government—Parliamentary Democracies I	(3)
429	Government and Politics of the Soviet Union	(3)
557	Government and Politics in Sub-Saharan Africa	(3)
465	Constitutional Politics	(3)
461	Civil Liberties	(3)
463	The American Judicial Process	(3)
412	Comparative Government—Parliamentary Democracies II	(3)
436	International Organization	(3)
419	The Governments and Politics of Eastern Asia	(3)
428	Latin American Government and Politics	(3)
470	American Political Parties	(3)
441	Early Political Theory	(3)
442	Modern Political Theory	(3)
473	Public Opinion	(3)
557	Kentucky Government and Constitution	(3)
545	American Political Thought	(3)
476	Legislative Process	(3)
487	Introduction to Public Administration	(3)
588	Public Personnel Administration	(3)
489	Administrative Agencies and Public Policy	(3)
580	The Budgetary Process	(3)
584	The American Presidency and the Federal Executive	(3)
610	Comparative Politics: Theory and Method	(3)
630	Proseminar in Non-Institutional Political Behavior	(3)
654	Proseminar in Judicial Process	(3)
549	Science, Technology and Political Theory	(3)
555	Intergovernmental Relations in the American Federal System	(3)
671	Strategies of Inquiry in Political Science	(3)
672	Introduction to Techniques of Political Research	(3)
674	Proseminar in Theories of International Politics	(3)
680	Proseminar in Political Institutions and Processes	(3)
690	Contemporary Political Thought: Theoretical Foundations of Political Concepts and Issues in the Twentieth Century	(3)
711	Current Research in Political Science	(3)
737	Transnational Organizations and Processes	(3)
751	Seminar in Metropolitics	(3)
752	Problems in State and Local Government	(3)
757	Seminar in Comparative Democratic Political System	(3)
758	Seminar in Soviet Politics, Government, and Foreign Policy	(3)
759	Seminar in African Political Systems	(3)
761	The Constitution and Civil Rights	(3)
762	Seminar in Judicial Policy Making	(3)
763	Seminar in Administrative Politics	(3)
764	Research in Judicial Behavior	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Seminar in Contemporary Political Theory	(3)
772	Advanced Problems in Research Methods	(3)
773	Asian Political Theory	(3)
775	Seminar in Public Policy	(3)
776	Seminar in Political Development	(3)
777	Research Problems in International Relations	(3)
778	Seminar in Comparative Foreign Policies	(3)
779	Voting Behavior	(3)
780	Legislative Behavior	(3)
784	Seminar in Political Socialization	(3)
785	Psychological Bases of Political Behavior	(3)
790	Special Problems in Public Administration	(3)
791	The Organization as a Political System	(3)
795	Special Problems in Political Science	(1-3)

PSYCHOLOGY

Graduate Faculty: Professors Robert Baker, Richard Bednar, Juris Berzins (Director of Graduate Studies), James Calvin, Ronald Dillehay (Chairman), Jesse Harris, Leonard Worell. Associate Professors Edward Engel, Donald McCoy, Michael Nietzel, Arthur J. Noneman, John Sensenig, James Spivey, and Thomas R. Zentall.

Associate Members: Assistant Professors Susan Belmore, Robert Bray, Patrick Cavanagh, Raymond Martorano, Suzanne Martorano, T. Benjamin Yandell.

Joint Appointments: Professor John Haley. Associate Professors William Drew, Russell Jones.

The major goal of the doctoral program in psychology is to prepare the student for a career in teaching and research in the fields of clinical, learning and physiological, perception and cognition, or social psychology. A master's degree in general psychology is also available.

The program in clinical psychology provides academic courses, practica, and internships which permit students to combine their teaching and research activities with a clinical career in the mental health field. Current areas of research interest include psychotherapy, behavior therapy, psychopathology, group dynamics, community intervention, and experimental personality. Clinical experience is available at such facilities as the University of Kentucky Medical Center, the U.S. Veterans Administration Hospital, and various nearby state institutions. The clinical program is fully accredited by the American Psychological Association.

The programs in experimental psychology provide academic courses and research experience in any of the following areas of concentration: learning, motivation, perception, developmental psychology, and cognitive processes. Current areas of research interest include verbal learning, psycholinguistics, instrumental learning, classical conditioning, visual perception, discrimination learning in children, and mathematical psychology. Laboratories for the study of human and animal behavior with supporting shop and computer facilities are available.

The program in social psychology is designed to provide intensive experience in research with members of the social psychology faculty, with the aim of developing in the student a strong theoretical and research competence with complex social phenomena. Traditions of both experimental laboratory research and naturalistic study are utilized; emphases include theoretical and applied significance of research. With broad limits set by the program, any given student's course of study is designed to fit that student's particular needs and interests. Course work in related behavioral sciences (for example, sociology, anthropology) is encouraged.

During the first year of the doctoral pro-

gram, all students gain experience in the major content areas of psychology and in psychological statistics. Thereafter, the student and the adviser construct a program of study consistent with the academic interests and professional goals of the student. A reading knowledge of one modern foreign language is required for Ph.D. candidates.

The M.A. or M.S. degree is awarded under Plan A only.

The minimum departmental standards for admission to graduate work in psychology include an undergraduate department over-all average of B or better, a satisfactory score on the verbal and quantitative aptitude of the Graduate Record Examination and three letters of recommendation. For additional information concerning the program in psychology and such matters as financial support, contact the Chairman, Department of Psychology.

400	Theories of Psychology in Historical Perspective.....	(3)
423	Processes of Psychological Development ..	(3)
444	Social Psychology.....	(3)
500	Senior Seminar in Psychology.....	(3)
502	Introduction to Industrial Psychology ..	(3)
503	Psychology of Industrial Personnel Procedure	(3)
523	Research Methods in Developmental Psychology	(4)
525	Human Senses and Perception.....	(3)
526	Human Senses and Perception Laboratory	(1)
527	Cognitive Processes	(3)
529	Psycholinguistics	(3)
532	Personality.....	(3)
533	Abnormal Psychology	(3)
535	Psychological Testing	(3)
539	Interpersonal Dynamics	(3)
545	Small Group Behavior.....	(3)
546	Applied Social Psychology	(3)
547	Experimental Social Psychology	(3)
550	Psychology of Learning.....	(3)
551	Psychology of Learning Laboratory	(1)
552	Animal Behavior.....	(3)
553	Animal Behavior Laboratory	(1)
556	Physiological Psychology.....	(3)
557	Physiological Psychology Laboratory	(1)
558	Biology of Motivation	(3)
601	Theories of Learning.....	(3)
602	Theories of Personality	(3)
603	Psychopathology	(3)
610	Psychometrics	(3)
611	Psychological Research	(3)
616	Research Design in Clinical Psychology ..	(3)
617	Experimental Approaches to Personality..	(3)
618	Experimental Approaches to Psychopathology	(3)
620	Proseminar in Systematic Psychology	(2)
621	Proseminar in Learning	(2)
622	Proseminar in Personality.....	(2)
623	Proseminar in Sensation and Perception ..	(2)
624	Proseminar in Social Psychology.....	(2)
625	Proseminar in Developmental Psychology..	(2)
627	Proseminar in Physiological Psychology ..	(2)

628	Proseminar in Human Learning and Thinking.....	(2)
629	Introduction to Clinical Psychology	(1)
630	Clinical Methodology I	(2)
631	Practicum in Clinical Methodology I	(2)
631	Clinical Methodology II	(2)
633	Practicum in Clinical Methodology II....	(2)
634	Practicum in Clinical Psychology III	(3)
635	Practicum in Clinical Psychology IV.....	(3)
636	Systems of Psychotherapy.....	(3)
637	Practicum in Psychotherapy and Behavior Change	(1-3)
638	Clinical Child Psychology	(3)
640	Practice in Testing: Intelligence Tests....	(4)
641	Psychological Measuring Instruments.....	(3)
647	Disorders of Language.....	(3)
650	Diagnosis and Counseling in Counseling Psychology	(3)
663	Practicum in Industrial Psychology	(3)
700	Seminar in Behavior Modification	(3)
701	Seminar in Clinical Child Psychology	(3)
702	Seminar in Community Mental Health	(3)
703	Seminar in Group Therapy.....	(3)
704	Seminar in Hypnosis	(3)
705	Research in Psychotherapy and Behavior Change	(3)
710	Seminar in Clinical Psychology.....	(3)
713	Practicum in Group Therapy	(3)
761	Interpersonal Processes in Critical Situations.....	(3)
767	Seminar in Physiological Psychology	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree.....	(0-12)
770	Seminar in Psychology I	(0)
771	Seminar in Psychology II.....	(0)
772	Seminar in Learning	(3)
774	Seminar in Verbal Behavior	(3)
775	Advanced Seminar in Perception.....	(3)
776	Seminar in Animal Motivation	(3)
777	Seminar in Mathematical Psychology	(3)
778	Seminar in Development Psychology	(3)
779	Seminar in Social Psychology	(3)
780	Problems in Psychology	(2)
781	Research Participation	(1)
790	Research in Psychology	(3)

PUBLIC ADMINISTRATION

Director of Graduate Studies: Merlin M. Hackbart

Associate Director: John Wanat

The MPA program of study reflects the conviction that administrative processes in the public and private sectors are related but different. In this program, the fields of economics, finance, political science, and management are coupled with the administrative skills of decision making, behavioral science, and accounting control. Political, legal, and policy environments are added to complete the administrative core.

The first year of study is devoted to a core which emphasizes 24 hours in the administrative areas of analysis, the environment of public administration, and plan-

ning and policy of public administration.

During the second year, the student has the flexibility to define an area of specialization. Specialization in 15 hours of course work and six hours of internship is offered in five areas: higher education, human services, urban and regional development, governmental administration, and health administration.

Requirements

1. The Graduate Management Admission Test of the Graduate Record Examination must be taken prior to admission.
 2. Completion of a minimum of 45 semester hours of graduate work.
 - a. Administrative Core (24 semester hours)
 - PA 621 (4 hours)
 - PA 622 (4 hours)
 - PA 623 (4 hours)
 - PA 626 (3 hours)
 - PA 627 (3 hours)
 - PA 628 (3 hours)
 - PA 629 (3 hours)
 - b. Area of Concentration (21 semester hours)

Selection of one of the following:

Governmental Administration:

PS 553, PS 578, PS 580, PS 584, PS 751, PS 752, PS 790

Health Administration:

Course work (specific numbers not yet assigned) will include such topics as overview, planning and evaluation of health systems, plus the behavioral and social factors affecting health care delivery.

Higher Education Administration:

EDH 718, EDH 719, EDH 733, EDH 734, EDH 798

Human Services Administration:

HSA 602, HSA 604, HSA 606

Urban and Regional Development Administration:

ECO 673, ECO 682, ECO 683, ANT 538, PS 751, SOC 615, SOC 620, SOC 695

Concentration (9 hours)

Related Electives (6 hours)

Practicum, internship, or Performance on Job (6 hours)
- 621 Analysis of Organizations: Decision Science Methods. (4)
 - 622 Analysis of Organizations: Financial Control Methods. (4)
 - 623 Analysis of Organizations: Behavioral Science Methods. (4)

- 626 Administration of Public Organizations. . (3)
- 627 The Fiscal Setting of Public Organizations (3)
- 628 Legal and Political Environment of Public Organizations. (3)
- 629 Public Policy Formulation and Social Planning. (3)
- 711 Internship in Public Administration. (6)
- 795 Special Topics in Public Administration. . (3)
- 796 Independent Study in Public Administration (3)

HUMAN SERVICES ADMINISTRATION

- 602 Human Service Delivery Systems. (3)
- 604 Management Skills (3)
- 606 Independent Study. (3)

RADIATION MEDICINE

Graduate Faculty: Professor Yosh Maruyama. Associate Professors John Calkins, Joseph Sayeg (Director of Graduate Studies). Assistant Professor Ralph Christensen.

Graduate educational programs in Radiation Medicine are closely allied with those in the Department of Health Radiation Sciences, College of Allied Health Professions. Course work deals with a study of the physical properties and characteristics of radiation, the effects of ionizing radiation upon matter and living organisms, and safety and protection considerations of radiation. Courses jointly listed with the College of Physics and Astronomy deal with the Medical Physics in Diagnostic Radiation Physics, Therapeutic Radiation Physics and the Physics and Instrumentation of Nuclear Medicine. Courses jointly listed with Biological Sciences deal with the biological effects of ionizing radiation. Research and clinical training in a health-medical setting provides the student an opportunity for exposure to radiation application in a Medical and Hospital setting.

Graduate programs are detailed under Health Radiation Sciences, College of Allied Health Programs elsewhere in this Bulletin. Inquiries should be addressed to the Director of Graduate Studies.

- 472 Interaction of Radiation with Matter (3)
- 540 General Radiation Biology (4)
- 545 Radiation Hazards and Protection (2)
- 546 General Medical Radiological Physics. . (2)
- 547 Medical Radiation Imaging I: Physical Aspects of Diagnostic Radiology (2)
- 548 The Physics of Radiation Therapy (2)
- 549 The Physics and Instrumentation of Nuclear Medicine (3)
- 640 Biological Effects of Radiation (3)
- 660 Practicum in Radiation Medicine (1-12)
- 740 Mammalian Radiation Biology. (2)

SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

Graduate Faculty: Professor Leon Zolondek. Associate Professors Paul Forand (Chairman), Roger B. Anderson.

At present no graduate majors are offered in Slavic and Oriental Languages and Literatures.

RUSSIAN

- 400 Seminar on Special Topics in Russian (3)
- 410 Advanced Readings in Russian Literature (3)
- 411 Advanced Readings in Russian Literature (3)
- 450 Dostoevsky (In English) (3)
- 460 Tolstoy (In English) (3)
- 463 Russian Drama (In Russian) (3)
- 464 Survey of Russian Literature to 1800 (In Russian) (3)
- 480 History of Russian Poetry (In Russian) ... (3)

HEBREW

- 458 Modern Hebrew Literature. (3)

ARABIC

- 442 Arabic Reading I. (3)
- 443 Arabic Reading II (3)

OTHER DEPARTMENTAL OFFERINGS

- 444 The Writings of the Muslim Mystics (3)
- 455 Spanish Islam. (3)
- 457 Modern Arabic Literature in Translation. (3)

SOCIAL AND PHILOSOPHICAL STUDIES IN EDUCATION

Graduate Faculty: Professors David Denton, Richard Warren (Chairman). Associate Professors Clint Collins (Director of Graduate Studies), Willis Griffin.

Associate Members: Associate Professors Alan DeYoung, Richard LaBrecque. Assistant Professors John Abrahamson, John Thelin.

The faculty of the Department of Social and Philosophical Studies in Education is engaged in the systematic analysis and interpretation of education using appropriate knowledge and methodologies of the humanities and social sciences. Their efforts are directed to (1) developing teachers and researchers with special competencies in social and philosophical studies, (2) assisting in the preparation of educational personnel, (3) contributing research based on special interests, and (4) changing and improving education through active participation in redirection and reform. The Department seeks to develop competencies

which assist the student in approaching education more rationally, critically, responsibly, and enthusiastically.

Graduate students may expect to develop special competencies through college course offerings, independent studies, and other experiences. In addition, students will be expected to pursue appropriate studies in other University colleges and departments to broaden their disciplinary perspectives and/or to gain greater depth and scholarship. The Department represents a link between the humanities and social sciences and the preparation of professional educator. It seeks the broadest perspective on education as an important area of human endeavor.

The Department of Social and Philosophical Studies offers programs leading to the following degrees: Master of Science in Education, Master of Arts in Education (Plans A and B available), Specialist in Education (Ed.S.), and Doctor of Education (Ed.D.). The Department participates in a joint doctoral program (Ph.D.) in Studies in Higher Education with the Department of Higher Education. The Department also participates in a joint doctoral program with regional universities. A minimum of 31 hours is required for the Master of Science of Education degree, six of which may be thesis credit and six of which must be taken outside the College of Education. The primary difference between this degree and the Master of Arts in Education degree is that the latter requires a minimum of 12 hours outside the College of Education.

532	Race and Ethnic Relations	(3)
533	Introduction to the Philosophic Study of Education	(3)
599	Foundations of Multi-Cultural and International Education	(3)
601	Proseminar	(1)
640	Philosophy of Education	(3)
645	Social Issues in Education	(3)
646	Analysis of Thinking	(3)
650	History of Western Education	(3)
651	History of Education in the United States	(3)
652	History of Educational Thought	(3)
653	History of Higher Education	(3)
655	Comparative Education	(3)
656	International Development Education	(3)
661	Sociology of Education	(3)
662	Analysis of Educational Change	(3)
663	Field Studies in Educational Institutions	(3)
665	Education and Culture	(3)
724	Epistemological Problems in Education	(3)
725	Analysis of Value Questions in Education	(3)
750	Problems in Sociology of Education	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)

773	Seminar in Foundations of Education	(3)
778	Seminar in History of Education in Kentucky	(3)
785	Independent Study in Social and Philosophical Problems in Education	(3)

SOCIAL PROFESSIONS

Graduate Faculty: Professors Ronda S. Connaway (Dean), Zafar Hasan (Director of Graduate Studies), Associate Professors Kennard Wellons, Constance Wilson.

Associate Members: Professor Dorothy A. Miller, Associate Professors Richard Brautigam, Elizabeth Crowell, Martha E. Gentry, Elizabeth Kirlin, Edna Roth, Assistant Professors Paul Kim, Vernon R. Wiehe.

The College of Social Professions publishes a bulletin explaining the total program. Please write College of Social Professions, Patterson Office Tower, University of Kentucky.

The College of Social Professions offers a graduate curriculum of four semesters duration, leading to the Master of Social Work degree in accordance with Plan B. The MSW degree program is designed to prepare students for careers in the social professions. The College also offers a series of courses in its undergraduate social work program which may be taken for graduate credit by graduate students in other majors.

Students must meet the general requirements of The Graduate School, as listed elsewhere in this Bulletin, as well as other specific requirements of the College of Social Professions for the Master of Social Work degree as indicated below.

1. Earn 54 hours of credit with a grade-average of B or above. Forty of these credits must be in the required social work courses. Four credits will be chosen from additional courses offered within the graduate social work curriculum of the College of Social Professions. The remaining 10 credits may be elected from relevant courses offered throughout the University or by the College of Social Professions.

Graduates with a B.A. in Social Work may petition to substitute other courses for specific courses required for the MSW degree if in their opinion there is likely to be unnecessary duplication in content. Such students will be required to establish their knowledge competence in the subject area for which they are petitioning to

take substitute courses. In addition, Bachelor degree graduates from other majors may, by special examination, be excused from taking specified required courses in the MSW curriculum by reason of equivalent content they may have had in their undergraduate degree courses and to substitute other related courses. These special arrangements do not change the credit hours required for the M.S.W. degree.

2. Earn not less than 28 of the 54 required credit hours at the University of Kentucky. All social work transfer credits accepted for the degree must have been earned in a school accredited by the Council on Social Work Education.
3. Advance to degree candidacy by the end of the first year of graduate study. In order to be a degree candidate the student must be admitted to candidacy for the master's degree by The Graduate School and have completed the College of Social Professions advancement-to-candidacy review.
4. Successfully complete the final comprehensive examination. This examination consists of an intensive review with students of the total two year education program to determine their potential capacity for professional practice.

The M.S.W. degree program has been accredited by the Council on Social Work Education through June 1980.

Full-time students are admitted to the M.S.W. degree program primarily in the fall semester. Applications to the College of Social Professions should be filed not later than April 15, prior to entrance in the fall. A limited number of applicants for full-time study are admitted in the spring semester. An application for admission to The Graduate School must be filed before a student can be considered for the M.S.W. program.

444	Educational Practicum I	(6-8)
445	Educational Practicum II	(8)
477	Field Experience for Non-Majors	(3-6)
500	Public Welfare Administration	(3)
501	Social Welfare Policy: Theory and Implementation	(3)
505	Child Welfare Services	(2-3)
510	Mental Health Knowledge for the Social Professions	(2-3)
511	Perspectives on Human Behavior and the Social Environment	(3)

512	Medical Knowledge for the Social Professions.....	(3)
516	Social Work Research	(3)
520	Interventive Methods in Social Work	(4)
523	Social Perspectives on Racism and Ethnic Prejudices in America.....	(2-3)
527	Senior Seminar	(3)
541	Administration and Supervision in the Social Professions.....	(3)
551	Public Assistance Programs.....	(3)
561	The Role of Social Work in Criminal Justice	(3)
571	Social Work and the Law.....	(3)
580	Topical Seminar in Social Work.....	(2-4)
601	Social Work Practice	(4)
602	Social Work Practice with Adults	(2)
603	Social Work Practice with Children and Youth.....	(2)
604	Social Work Practice with the Aging	(2)
605	Social Work Practice in Health Services	(2)
606	Seminar in Criminal Justice Processes.....	(2)
607	Social Work Practice with Families.....	(2)
608	Social Work Practice for Social Reform.....	(2)
609	Clinical Social Work Practice	(2)
613	Urban Ecology and Aging	(2)
620	Human Growth and the Social Environment	(4)
621	Perspectives on Deviance for Social Workers	(2-3)
622	Group Theory for Social Workers	(2)
624	Perspectives on Human Sexuality for the Social Professions.....	(2)
625	Comparative Social Welfare Policies and Programs	(2-3)
630	Social Welfare Policies and Services	(4)
632	Social Work and the History of Social Reform	(2)
633	Social Welfare and the Political Processes	(2-3)
640	Graduate Educational Practicum I.....	(10)
642	Psychological Aspects of Human Aging.....	(2)
650	Problem-Solving Seminar	(2)
652	Public Policy and Aging	(2)
662	Income Security and Aging	(2)
680	Special Problems in Social Work Practice	(2-4)
690	Research in Social Work	(2)
701	Advanced Practice Theory	(2)
706	Selected Issues in Criminal Justice.....	(2)
708	Seminar in Correctional Change Technology	(2)
711	Advanced Leadership Roles in Social Work	(3)
712	Principles and Methods of Field Instruction in Social Work I.....	(2)
713	Principles and Methods of Field Instruction in Social Work II.....	(2)
720	Organizational and Administrative Theory for Social Workers	(2-4)
721	Organization and Management Methods for the Social Professions	(2-3)
730	Public Social Policy and the Delivery of Social Services	(2)
731	Social Work and Community Planning	(2-3)
732	Social Planning and Development	(2-3)
740	Graduate Educational Practicum II	(8)
745	Advanced Specialized Educational Practicum	(2-4)
750	Seminar on Evaluative Research for the Social Professions.....	(2)
770	Seminar on Social Issues and Social Work Practice	(2)
780	Independent Work	(2-6)
790	Methods in Social Work Research.....	(2-6)

SOCIOLOGY

Graduate Faculty: Professors James Brown, Lee Coleman, C.M. Coughenour, Thomas Ford, Eugene Gallagher, James Gladden, William Kenkel, John O'Donnell, Jon Shepard, John Stephenson, Robert Straus, Willis Sutton (Chairman), Harwin Voss, George Wilber. Associate Professors James Christenson, Richard Clayton, Thomas Garrity, Jon Hendricks, Philip Moody, Gerald Slatin (Director of Graduate Studies).

Associate Members: Associate Professors Walter Abbott, Dwight Billings, Paul Warner. Assistant Professors Michael Brooks, Lawrence Busch, Lori Garkovich, James Hougland, William Lacy.

Graduates from accredited colleges who meet the requirements of the Graduate Program in Sociology and The Graduate School may work toward the following advanced degrees with major work in sociology: Master of Arts, Master of Science in Agriculture, and Doctor of Philosophy. Both Plan A and Plan B are offered for the Master's degree, and an applied community development option is now available within Plan B. Only one modern foreign language is required for the Ph.D. degree in sociology.

Graduate students pursuing the Ph.D. degree are expected to choose either two specialty areas within sociology or one specialty area in sociology and a minor area outside the Department. Areas of specialization in sociology currently stressed are: community, demography-ecology, deviance, family, medical sociology, rural, social change and development. While core seminars in these specialties are offered, individual program flexibility is maintained so that a student's own interests may develop.

To aid in financing graduate education a considerable number of assistantships are available to qualified students. Outstanding students may compete for fellowships.

Sociologists at the University of Kentucky carry on a substantial variety of research projects, consultative activities, extension education programs and community services. Specialized experience and training is available to graduate students through affiliations with nearby institutions.

Research opportunities within the prisons and other correctional institutions of the state may be arranged. Experience is available in rural sociological research at the Agricultural Experiment Station. Opportunity for applied sociology experience

in the Cooperative Extension Service is also available.

The Department participates in the University's Center for Developmental Change, which is devoted to interdisciplinary research and training in planned change. The Department of Behavioral Science, College of Medicine, includes sociologists on its staff and conducts research and other activities of a sociological nature. Sociology graduate students with appropriate interests and training are eligible for assistantships and other appointments in these several units.

Department standards for admission to graduate work in sociology are similar to those of The Graduate School, including satisfactory scores on the verbal and quantitative tests of the Graduate Record Examination. For additional information on departmental requirements and opportunities for financial assistance, write to the Director of Graduate Studies in Sociology.

409	The Family	(3)
413	Community Analysis	(3)
418	Social Change	(3)
436	Sociology of Deviant Behavior.....	(3)
437	Criminology.....	(3)
441	Group Organization and Leadership.....	(3)
444	Social Psychology.....	(3)
493	Social and Cultural Determinants of Economic Growth and Development	(3)
501	Population Analysis.....	(3)
502	Methods of Demographic Analysis.....	(3)
503	Social Classes	(3)
510	Socialization in the Family	(3)
515	Diffusion of Technology in Modern Society	(3)
517	Rural Sociology.....	(3)
519	Sociology of Urban Life.....	(3)
521	Industrial Sociology.....	(3)
522	Sociology of Complex Organizations	(3)
525	Religion and Culture.....	(3)
526	Culture and Personality	(3)
527	Society and Health.....	(3)
529	Political Sociology	(3)
531	Sociological Analysis of American Society.....	(3)
532	Race and Ethnic Relations	(3)
533	Social Anthropology	(3)
534	The Southern Appalachians: A Sociological Interpretation	(3)
538	Juvenile Delinquency	(3)
540	Collective Behavior and Social Movements	(3)
542	Human Relations in Administration.....	(3)
546	Social Factors in Mental Health	(3)
547	Dimensions of Aging	(3)
549	Sociological Aspects of Mass Communication.....	(3)
551	Advanced Principles of Sociology	(3)
561	Comparative Sociology.....	(3)
565	Special Problems in Sociology.....	(1-3)
571	Contemporary Sociology	(3)
581	Techniques of Social Investigation	(3)
615	Analysis of Community Research	(3)
618	Theories of Social Change	(3)
620	Sociology of Community Development	(3)
625	Sociology of Religion	(3)

632	Seminar in Race and Ethnic Relations . . .	(3)
636	Theory and Research in Deviant Behavior . . .	(3)
651	Systematic Sociology	(3)
653	Family Theory and Dynamics	(3)
661	Sociology of Education	(3)
670	Seminar on Role Theory	(3)
671	Seminar in Contemporary Sociology	(3)
681	Research Design and Analysis	(3)
685	Integration of Theory and Research	(3)
690	Community Action Analysis	(3)
695	Social Ecology	(3)
702	Seminar in Social Demography	(3)
720	Seminar in Community Theories	(3)
727	Seminar on Socio-Cultural Change	(3)
731	Seminar in Comparative Social Organization	(3)
738	Seminar: Drug Use as Deviant Behavior . . .	(3)
751	Seminar in Sociological Theory	(3)
766	Concepts in Medical Sociology	(3)
768	Residence Credit for the Master's Degree . .	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
772	Topical Seminar in Sociology	(3)
773	Topical Seminar	(3)
775	Seminar in the Family	(3)
776	Seminar in Dependency Behavior	(3)
777	Seminar in Mental Illness Concepts, Research and Policy	(3)
779	Seminar in Social Psychology	(3)
780	Special Problems in Sociology	(1-6)
790	Research in Rural Sociology	(1-3)
792	Research in Sociology	(1-6)
797	Community Development Practicum	(1-9)

SOIL SCIENCE

Graduate Faculty: Professors H.H. Bailey, A.J. Hiatt, H.F. Massey, D.E. Peaslee, R.E. Phillips (Director of Graduate Studies), J.L. Ragland, J.L. Sims, G.W. Thomas. Associate Professors R.I. Barnhisel, R.L. Blevins, Charles Rieck.

The Soil Science graduate program offers graduates work leading to the Master of Science and the Doctor of Philosophy degrees with options in soil chemistry, soil fertility, soil genesis, morphology and classification, soil mineralogy, soil microbiology and soil physics. For the M.S. degree, 24 hours of course work plus an acceptable thesis are required (Plan A). In certain exceptional cases, the thesis may be replaced by six additional hours of course work. Work leading to advanced degrees must conform to the general rules and regulations of The Graduate School. A reading knowledge of one foreign language is required for the Ph.D. degree.

Preparation for graduate work in Soil Science should include some course work in mathematics, chemistry, physics and biological sciences. Students with deficiencies in any of these areas will be expected to make up any deficiency early in the course of their graduate study.

468	Soil Use and Management	(3)
470	Fertilizers and Soil Fertility	(3)
473	Soil Morphology and Mapping	(3)
560	Soil-Plant Relationship	(3)
562	Forest Soils	(3)
566	Soil Biology	(3)
575	Soil Biology	(3)
581	Chemical Analysis of Soils and Plants . . .	(4)
599	Special Problems in Agronomy	(1-4)
652	Soil Classification and Geography	(3)
660	Advanced Soil Biology	(2)
671	Soil Chemistry	(4)
675	Advanced Soil Physics	(3)
681	Mineralogical and Chemical Analysis of Soils	(4)
690	Topics in Soil Chemistry	(1-4)
691	Topics in Soil Mineralogy	(1-4)
712	Advanced Soil Fertility	(3)
721	Soil Genesis	(3)
741	Clay Mineralogy	(3)
768	Residence Credit for the Master's Degree . .	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Agronomy Seminar	(1)
799	Research in Agronomy	(1-4)

SPANISH AND ITALIAN LANGUAGES AND LITERATURES

Graduate Faculty: Professors Joseph Jones (Director of Graduate Studies), Margaret Jones (Associate Dean, The Graduate School), John Keller, John Lihani, William McCrary, Daniel Reedy (Chairman), Gerardo Saenz. Associate Professors Brian Dendle, Michael Impy.

The Department of Spanish and Italian offers the Master of Arts and the Doctor of Philosophy degrees. Graduate Record Examination scores are required for admission.

MASTER OF ARTS DEGREE

Prerequisites: Attainment in Spanish equivalent to that required for the undergraduate major in Spanish at the University of Kentucky.

Requirements: Standard Graduate School requirements; reading knowledge of a second foreign language; successful completion of 30 hours of course work (Plan B), or successful completion of 24 hours of course work and an acceptable thesis (Plan A). M.A. candidates are expected to take the final written and oral examinations during the semester in which they will have completed the degree requirements. The M.A. written examination is designed to test the candidate's knowledge of the following areas: 1) Hispanic civilization and literary history, 2) the M.A. reading list, and 3) the candidate's composite course work. SPI 502

(Survey of the Spanish Language) is recommended but not required. For individuals who contemplate further work leading to the doctorate, SPI 651 (Bibliography and Methods of Research) is recommended but not required.

DOCTOR OF PHILOSOPHY DEGREE

Recommendations and Requirements: Standard Graduate School requirements; SPI 502 (Survey of the Spanish Language), SPI 601 (Old Spanish I), SPI 602 (Old Spanish II); SPI 651 (Bibliography and Methods of Research) are recommended but not required; a reading knowledge of two languages other than Spanish and English is required; successful completion of a series of three written examinations and an oral examination is required for qualification for candidacy for the doctorate (see remarks below); presentation of acceptable dissertation.

Doctoral candidates may choose to organize their studies either by traditional area-divisions or by genre. Organization by area requires the candidate to pass qualifying examinations in (1) Hispanic linguistics; (2) Medieval Spanish literature and civilization; (3) Renaissance and Golden Age Spanish literature and civilization; (4) Modern Spanish literature and civilization; and (5) Spanish American literature and civilization. The term Hispanic includes both Peninsular and Spanish American studies.

Generic specialization requires the candidate to pass qualifying examinations in (1) Hispanic drama; (2) Hispanic prose fiction; (3) Hispanic poetry; (4) Hispanic non-fiction prose and civilization; and (5) Hispanic linguistics. The term Hispanic includes both Peninsular and Spanish American studies.

All candidates for the doctorate are asked to declare an area of special competence, either generic or periodic. It is assumed that the candidate's record will reflect more course work in this area. Accordingly, the examination for the special area will be longer and more detailed than those for the remaining three. Individuals who elect to declare linguistics as an area of special competence, in consultation with the Graduate Director, may combine two of the four required written examinations (e.g., Medieval-Renaissance literature).

SPANISH

400	Senior Seminar	(3)
405	The Works of Cervantes	(3)
406	Spanish Literature of the 20th Century	(3)
407	Literature of Social Protest in Spanish America	(3)
420	Twentieth Century Spanish American Literature in Translation	(3)
421	Masterpieces of the Spanish Baroque Theater in Translation	(3)
422	Cervantes in Translation	(3)
423	Literary Currents of 20th Century Spanish Literature in Translation	(3)
501	Spanish Phonetics, Pronunciation and Phonemics	(3)
502	Survey of the Spanish Language	(3)
503	Structure of the Spanish Language	(3)
504	Advanced Spanish Grammar and Composition	(3)
505	Advanced Spanish Grammar and Composition	(3)
506	Introduction to Comparative Spanish, Portuguese, and Italian Linguistics	(3)
511	Spanish Cultural and Intellectual Background to 1500	(3)
521	Intellectual and Cultural Background of the 16th and 17th Centuries	(3)
522	Survey of the Comedia I	(3)
523	Survey of the Comedia II	(3)
531	Studies in Modern Spanish Civilization	(3)
532	The Generation of 1898	(3)
541	Spanish American Short Story	(3)
551	Tutorial Seminar for Majors in Spanish	(1)
552	The Teaching of Modern Foreign Languages	(3)
601	Old Spanish: Phonology and Paleography	(3)
602	Old Spanish: Morphology and Syntax	(3)
611	Medieval Spanish Literature I	(3)
612	Medieval Spanish Literature II	(3)
613	Spanish Epic and Long Narrative Poetry	(3)
614	The Spanish and Spanish American Ballad	(3)
615	Spanish Poetry of the 13th, 14th, and 15th Centuries	(3)
616	Early Brief Narrative—13th, 14th, 15th Century	(3)
617	Spanish Medieval and Renaissance Drama	(3)
621	The Spanish Novel to Cervantes	(3)
622	Cervantes I	(3)
623	Cervantes II	(3)
624	The Spanish Novel from Cervantes to Romanticism	(3)
625	Mystic and Ascetic Writers of the 16th and 17th Centuries	(3)
626	Lope de Vega	(3)
627	The Theatre of Tirso de Molina	(3)
628	The Theatre of Calderon de la Barca	(3)
629	Spanish Poetry of the 16th and 17th Centuries	(3)
631	The Romantic Movement in Spain	(3)
632	Spanish Drama from the Generation of 1898 to the Present	(3)
633	The Spanish Novel of the 19th Century	(3)
634	Prose Fiction from the Generation of 1898 to the Present	(3)
635	The Spanish Essay from the 18th Century to the Present	(3)
636	Spanish Poetry from the 18th Century through the Generation of 1898	(3)
637	Spanish Poetry from the Generation of 1927 to the Present	(3)
641	Spanish American Drama	(3)
642	Spanish American Poetry: Colonial Period	

	to Independence	(3)
643	Spanish American Poetry: 1800-1910	(3)
644	Spanish American Poetry: 1910 to Present	(3)
645	Spanish American Novel: 1800-1910	(3)
646	Spanish American Novel: 1910-1940	(3)
647	Spanish American Novel: 1940 to Present	(3)
648	Literary Currents in Contemporary Spanish American Fiction	(3)
649	Spanish American Essay	(3)
651	Bibliography and Methods of Research	(3)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Seminar in Spanish Studies	(3)
771	Seminar in Spanish Linguistics	(3)
772	Seminar in Medieval Spanish Literature	(3)
773	Seminar in Golden Age Non-Dramatic Literature	(3)
774	Seminar in Golden Age Theatre	(3)
775	Seminar in Modern Spanish Literature	(3)
776	Seminar in Spanish American Literature	(3)
782	Special Studies in Spanish	(3)

ITALIAN

543	Survey of Italian Literature I	(3)
544	Survey of Italian Literature II	(3)
561	Old Italian	(3)
563	Dante I	(3)
564	Dante II	(3)
565	Petrarch and Boccaccio	(3)
566	Literature of the Italian Renaissance	(3)
571	Modern Italian Novel	(3)
572	Modern Italian Drama	(3)
573	Modern Italian Poetry	(3)
591	Dante in Translation	(3)
592	Italian Renaissance Masterpieces in Translation	(3)
593	Modern Italian Literature in Translation	(3)

RUMANIAN

461	Rumanian I	(3)
462	Rumanian II	(3)

SPECIAL EDUCATION

Graduate Faculty: Professors Edward Blackhurst (Chairman), Associate Professors Patricia Cegelka, M.C. Martinson, Catherine Morsink, C.M. Nelson (Director of Graduate Studies), James Tawney, Assistant Professor Richard Culatta.

Associate Members: Associate Professor Donald Cross, Assistant Professors William Berdine, Barbara Culatta, David Gast, Susan Keeshman, James McLoughlin.

Students may enroll for either degree or non-degree graduate programs in special education. Non-degree programs are designed primarily for those who are seeking Kentucky Provisional, Rank II or Rank I Teacher Certification in the following certification areas:

1. Learning and Behavior Disorders
2. Speech Pathology
3. Trainable Mentally Handicapped
4. Multiple Handicapped
5. Supervision of Special Education

Already certified special education teachers may also pursue the standard teaching certificate by selecting an area of emphasis in one of the following:

Early Childhood Education for the Handicapped
Severely Retarded Multiple Handicapped
Career and Vocational Education for the Handicapped
Speech Pathology
Special Education Resource Teaching

The Degree programs that are offered lead to the Master of Arts in Education or Master of Science in Education (Plan A and B available), Specialist in Education and Doctor of Education Degrees. Within the framework of College and University requirements, all graduate degrees are individually planned. This flexibility makes it possible to structure an appropriate program for each student, based upon previous background and career aspirations. Following are brief descriptions of the various graduate degree programs.

Minimum requirements for the Master of Arts in Education Degree are either (1) the completion of 30 semester hours of course work under Plan B or (2) 24 hours of course work and a thesis under Plan A as outlined at the beginning of the Education Section of this Bulletin. These minimum course credit requirements are distributed as follows:

Special Education	12
Electives in Education	6
Course work outside the College of Education	12
Minimum hours for the Master of Science in Education Degree are distributed as follows:	
Department of Special Education and support areas in College	24
Course work outside College of Education	6
Total	30

(At least 15 semester hours must be earned in courses at the 600-700 level and a comprehensive final examination is required.)

Students without a teaching certificate must meet deficiencies, including certification requirements, as outlined by their adviser, in addition to completing the 30 semester hours. Depending upon their educational background, students may obtain Rank II Certification concurrently with their Master's Degree. Students preparing for positions not requiring certification may petition for waiver of certification requirements upon application for admission to the program.

Candidates for the Master of Arts in Ed-

ucation or Master of Science in Education degree with concentration in speech pathology and audiology are expected to meet the academic and clinical requirements established by the American Speech and Hearing Association for the Certificate of Clinical Competence. Briefly, these requirements include: (1) a total of 60 semester hours of study, of which, at least 30 must be courses acceptable toward a graduate degree; and (2) 300 clock hours of supervised, direct clinical experience with individuals presenting a variety of communication disorders, of which at least 150 hours must be obtained at the graduate level. Master of Arts in Education or Master of Science in Education candidates in speech pathology and audiology must complete a minimum of 12 semester hours from the 600-700 level courses in speech pathology and audiology listed under special education. Successful completion of a comprehensive examination in speech pathology and audiology is also required.

General requirements for the Specialist in Education (Ed.S.) degree have been described in a previous section of this Bulletin. Ed.S. programs are individually planned for in-depth study in an area of special education. Students who hold a Kentucky Rank II Certification are awarded Rank I Certification upon completion of this degree.

The Doctor of Education (Ed.D.) program is designed to prepare leadership personnel for the field of special education. Although various programs of study can be planned, primary emphasis is placed upon training persons for positions in higher education and administration of special education programs. The requirements for this program are described in the Doctor of Education Section.

Two major types of financial assistance are available, on a competitive basis, to graduate students in special education.

1. Students may apply for graduate assistantships at all levels of graduate study. These are awarded from funds granted to the Department by the U.S. Office of Education, Bureau of Education for the Handicapped.
2. WHAS Crusade for Children traineeships for full-time study during summer school are available only to Kentucky teachers who are in the process of obtaining Provisional or Standard Certification in an area of special education.

Assistantships and traineeships are awarded on the basis of (1) commitment to

the field, as evidenced by previous work experience, references, and/or volunteer service; (2) prior academic record; and (3) financial need. Applications for financial assistance may be obtained from the Departmental Director of Graduate Studies.

500	Speech Analysis and Perception.....	(3)
502	Development and Evaluation of Instructional Materials in Special Education	(3)
505	Education of the Trainable Mentally Retarded	(3)
510	Early Childhood Education of the Handicapped	(2)
511	Speech and Language Development	(3)
512	Language Disorders I	(3)
513	Protecting the Human Rights of the Handicapped	(2)
514	Special Education Learning Environments	(2)
515	Career Education in Special Education	(2)
516	Principles of Behavior Management with Exceptional Children	(2)
517	Prosthetics for Handicapped Children	(2)
518	Working with Parents of the Handicapped	(3)
520	Survey of Severe Developmental Disabilities	(3)
524	Programs for the Adolescent Mentally Retarded	(3)
525	Education of the Orthopedically and Neurologically Handicapped	(3)
526	Education of the Educable Mentally Retarded	(3)
527	Characteristics of the Orthopedically and Neurologically Handicapped	(3)
528	Educational Assessment of the Mildly Handicapped	(3)
529	Educational Programming for the Mildly Handicapped	(3)
530	Characteristics of the Mentally Retarded	(3)
541	Characteristics of the Trainable Mentally Handicapped	(2)
547	Direct Observation and Assessment Procedures	(2)
548	Curriculum and Materials for the Trainable Mentally Handicapped Classroom	(2)
549	Practicum in the Trainable Mentally Handicapped Classroom	(4)
558	Problems in Special Education: (Variable Topic)	(1-9)
570	Characteristics of Emotionally Disturbed Children	(3)
579	Stuttering	(3)
587	Audiometry	(3)
591	Aural Rehabilitation	(3)
592	Problems and Needs of the Hearing Impaired	(3)
600	Survey of Special Education	(3)
601	Behavioral Management of Exceptional Children	(3)
602	Administration and Supervision in Special Education	(3)
610	Educational Evaluation of Exceptional Children	(3)
611	Educational Remediation of Learning Disabilities of Exceptional Children	(3)
612	Advanced Practicum in Special Education	(3-6)
613	Articulation and Articulation Disorders	(3)
614	Voice and Voice Disorders	(3)

616	Vocational Programming for Handicapped Youth and Adults	(3)
617	Cleft Palate and Cerebral Palsy	(3)
620	Instructional Programming in Early Childhood Special Education	(3)
621	Issues in Early Childhood Education of the Handicapped	(3)
622	Models of Early Childhood Intervention for the Handicapped	(3)
623	Practicum in Early Childhood Education of the Handicapped	(3-9)
627	Practicum in Speech Therapy	(3)
630	Educational Models in Severe Developmental Disabilities	(3)
631	Instructional Programming with Severely Developmentally Disabled	(3)
632	Advanced Practicum in Severe Developmental Disabilities	(1-12)
633	Research Practices in the Education of the Severely Developmentally Disabled	(3)
647	Disorders of Language	(3)
671	Education of Emotionally Disturbed Children	(3)
702	Seminar in Speech Pathology	(3)
710	Seminar in Mild Learning and Behavioral Disorders	(2)
711	Seminar in Severe Developmental Disabilities	(2)
712	Seminar in Special Education Professional Services	(2)
720	Seminar in Special Education Teacher Preparation	(3)
721	Practicum in Special Education Personnel Preparation	(1-9)
730	Seminar in Special Education Administration	(2)
731	Practicum in Special Education Administration	(1-9)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
779	Seminar in Special Education (Variable Topic)	(3)
789	Independent Study in Special Education	(1-6)
799	Research Techniques in Special Education	(3)

STATISTICS

Graduate Faculty: Professors Richard Anderson, Vasant Bhaskar (Chairman), Saul Blumenthal (Director of Graduate Studies), Zakkula Govindarajula, Harley McKean. Associate Professors David Allen, William Bramble, Peter Purdue.

Associate Members: Assistant Professors Emad El Neweih, James W. Evans, Robert Latta, Constance Wood.

The Department of Statistics offers programs of study leading to the degrees of Master of Science (Plan A or B available), and Doctor of Philosophy. The M.S. degree is professionally oriented for the student who plans a career in government, business or industry. The Ph.D. program offers a broad training in both theory and methodology while affording flexibility to orient the program to suit the student's interests. The statistics Ph.D. is well suited

for responsible positions in both the academic and commercial realms. In addition to formal course work and research training the advanced student has opportunities to gain valuable practical experience by participating in consulting activities on campus under faculty supervision.

Course work is available in areas associated with statistics such as computer science, biological modelling, econometrics, control theory, operations research and quantitative genetics.

A student intending to pursue graduate work in statistics should have one course each in advanced calculus (equivalent of Mathematics 432 or 471) and matrix algebra (equivalent of mathematics 462) for the first year's graduate courses. If possible, mathematical deficiencies should be corrected during the summer prior to entering The Graduate School.

Students with an undergraduate major in any of the mathematical, physical biological, social or applied sciences are encouraged to apply.

The University of Kentucky is represented on the Committee on Statistics of the Southern Regional Education Board.

MASTER'S PROGRAM

The Department offers the degree of Master of Science with (Plan A) or without (Plan B) a thesis. The core curriculum expected of all master's students is comprised of the following courses:

STA 503	(3)
STA 524	(3)
STA 531	(4)
STA 601	(3)
STA 603	(4)

Programs of study for Plan B require a total of at least 35 semester hours, which should include the equivalent of the five courses in the core curriculum and at least 18 additional credit hours. Of these 18 credit hours, at least 9 should be from the following list of statistics courses:

523, 612, 616, 621, 624, 626
641, 642, 643, 644, 661, 665

Programs of study for Plan A (with thesis) require a total of at least 29 semester hours, which should include the core curriculum and at least two courses from the previous list. Candidates should also satisfy the requirement that at least 18 hours for Plan B and 15 hours of non-thesis courses for Plan A must be at 600 level or higher. The free elective courses can be selected from a variety of courses both within and

outside the Statistics Department. Before the end of the second semester, the M.S. candidate must present a proposed plan of study for approval by the Director of Graduate Studies. There are no formal minor requirements.

All master's candidates are required to take a Department written examination on the core curriculum. These exams are normally administered in August.

DOCTORAL PROGRAM

The Ph.D. program requires 59 credit hours of course work. In addition to the equivalent of the five courses in the core of the M.S. program, each student takes STA 624, a one-semester measure theory course, and STA 701, 702 and 703. Beyond this core, the student takes at least 27 credit hours at the 600-700 level of which at most nine may be special topics courses (691/695) and at least 18 of which must be in Statistics. Before the end of the fourth semester, the candidate with the approval of the special committee presents a plan of study to the Department's graduate faculty. A reading knowledge of one foreign language is required of all Ph.D. candidates.

A student must pass the Master's departmental written examination at a Ph.D. level of competence to be eligible for the doctoral qualifying examination. The qualifying examination consists of a written examination taken by all Ph.D. students and an oral examination administered by the student's special committee. Within six months after passing the qualifying examination, the student presents a prospectus of the dissertation to the special committee for approval before pursuing the contemplated research to fruition.

Areas of current research interest include: Categorical data; non parametric inference and goodness of fit; large sample theory; design and analysis for linear and non linear models including predictor selection, variance components, computational algorithms, response surfaces, Bayesian regression, fitting splines and change-over designs; paired comparisons; incomplete data, especially censoring and truncation; life testing; ranking and selection; reliability; queueing theory; stochastic biological models, and sequential analysis.

417 Principles of Operations Research II	(3)
421 Basic Statistical Theory I	(3)
422 Basic Statistical Theory II	(3)

423 Introductory Probability	(3)
482 Discrete Methods and Models in Applied Mathematics	(3)
503 Introduction to Statistical Methods	(3)
515 Mathematical Programming and Extensions	(3)
523 Probability Models	(3)
524 Probability	(3)
525 Introductory Statistical Inference	(3)
531 Theory of Statistical Inference I	(4)
601 Theory of Statistical Inference II	(3)
603 Introduction to Linear Models and Experimental Design	(4)
612 Segmental Analysis	(3)
616 Design and Analysis of Sample Surveys	(3)
621 Nonparametric Inference	(3)
624 Applied Stochastic Processes	(3)
626 Time Series Analysis	(3)
630 Bayesian Inference	(3)
635 Survivability and Life Testing	(3)
641 Design and Analysis for Variance Component Models	(3)
642 Response Surface Techniques	(3)
643 Advanced Experimental Design	(3)
644 Advanced Linear and Nonlinear Models	(3)
661 Multivariate Analysis I	(6)
665 Analysis of Categorical Data	(3)
670 Basic Statistical Analysis	(4)
671 Regression and Correlation	(2)
672 Design and Analysis of Experiments	(2)
673 Distribution-Free Statistical Inference and Analysis of Categorical Data	(2)
675 Survey Sampling	(2)
677 Applied Multivariate Methods	(3)
678 Statistical Genetics	(3)
681 Statistical Techniques for Engineers and Physical Scientists	(3)
690 Seminar in Statistics	(1)
691 Special Topics in the Planning and Analysis of Experiments	(3)
695 Special Topics in Statistical Theory	(3)
701 Advanced Statistical Inference I	(3)
702 Advanced Statistical Inference II	(3)
703 Advanced Probability	(3)
704 Advanced Probability: Stochastic Processes	(3)
722 Topics in Nonparametric Inference	(3)
768 Residence Credit for the Master's Degree	(1-6)
769 Residence Credit for the Doctor's Degree	(0-12)

THEATRE ARTS

Graduate Faculty: Professor J. Robert Wills (Director of Graduate Studies).

Associate Member: Assistant Professor John B. Lynaugh.

Theatre lives at the moment of contact between actor and audience. This Department expects its graduate students to approach that moment from several points: historical, critical, practical, theoretical and experimental. Within this framework, each candidate for a Master of Arts degree must complete a minimum of 30 semester hours. A maximum of six of these may be taken in allied subjects. Graduate students are encouraged to concentrate in one of

the following areas: acting, directing, design, production.

It is assumed that a student who seeks a Master's degree in the Department of Theatre Arts will have had courses approximating those required for an A.B. degree with a major in theatre arts. If not, the student must remove the deficiency by taking (without graduate credit) courses in addition to those normally specified for the Master's degree.

The Department offers the Master's degree according to Plan B only at the present time.

588	Contemporary Theatre	(3)
589	History of Theatre in the United States	(3)
590	History of the Theatre I	(3)
591	History of the Theatre II	(3)
592	Scenography I	(3)
593	Scenography II	(3)
594	Acting III	(3)
595	Acting IV	(3)
596	Playwriting	(3)
597	Teaching of Theatre Arts	(3)
598	Theatre Directing I	(3)
599	Theatre Directing II	(3)
690	Studies in Technical Theatre: Production	(3)
691	Studies in Technical Theatre: Lighting	(3)
694	Advanced Styles of Acting	(3)
770	Seminar in Theatre	(3)
780	Independent Study in Theatre	(3)
798	Directing	(3)

TOXICOLOGY

Graduate Faculty: Professors Charles T. Ambrose, T.Z. Csaky (Acting Director), Wyman Dorrough (Director of Graduate Studies), Helmut A. Gordon, William J. Waddell, Ralph F. Wiseman. Associate Professors James W. Flesher, Thomas Tobin, S.Y. Yeh.

The Graduate Program in Toxicology is administered by a separate academic department, the Graduate Center for Toxicology, headed by a director and staffed by teaching faculty with primary appointments in various departments of the Medical Center, the College of Agriculture and the College of Arts and Sciences. Both the M.S. (Plan A) and Ph.D. degrees are offered.

Toxicology is a science concerned with the harmful interactions of chemical agents with living systems. The Graduate Program in Toxicology is designed to train individuals to utilize the biological, physical, and mathematical sciences in the study of the causes, mechanisms, and evaluation of poisoning as well as the sources, identification and quantitation of poisons. Special emphasis is placed upon the study of chemical damages inflicted upon by the

environment (environmental toxicology).

Graduates of accredited colleges with a baccalaureate degree in the biological sciences, chemistry, or physics or professional degrees in medicine, dentistry, pharmacy, or veterinary medicine may apply for graduate study in the toxicology program. It is advisable that candidates have a good background in chemistry, physics, biological sciences, and mathematics. Students with other advanced degrees may be considered for admission. The number of transferable credits and courses will be considered however on the merits of each individual case.

A minimal core curriculum is compulsory. The rest of the curriculum will be tailored to meet individual needs. Only one modern foreign language is required for the Ph.D. degree in Toxicology.

The Toxicology Graduate Program is included in the Academic Common Market of the Southern Regional Education Board.

Inquiries concerning the details of the program as well as possible financial support for graduate students should be addressed to the Director, Graduate Center for Toxicology or to the Director of Graduate Studies in the graduate Center for Toxicology.

521	General Pharmacology and Toxicodynamics	(2)
640	Detoxification Mechanisms	(3)
650	Cellular and Histotoxicology	(2)
672	Behavioral Pharmacology and Toxicology	(2)
680	Toxicology	(5)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Proseminar in Toxicology	(1)
780	Special Problems in Toxicology	(2)
790	Research in Toxicology	(1-5)

VETERINARY SCIENCE

Graduate Faculty: Professors John Bryans (Chairman), R.W. Darlington (Director of Graduate Studies), J.H. Drudge, E.T. Lyons, W.H. McCollum. Associate Professors R.G. Loy, E.T. Lyons, T.W. Swerczek, Thomas Tobin.

Associate Members: Assistant Professors J.W. Blake, Judith Pachcian.

The Department of Veterinary Science offers a program of study and research leading to the Master of Science (Plan A only) and Doctor of Philosophy degrees. Possible areas of concentration are comparative pathology, parasitology, reproductive physiology, pharmacology and toxicology, immunology and virology. The program is designed for individuals

with the Doctor of Veterinary Medicine degree who desire research training in one of the above areas and for qualified graduates of accredited undergraduate institutions. Individuals electing pathology as their area of concentration must be graduate veterinarians. Individual programs of study must conform with the general rules and regulations of The Graduate School.

A limited number of research assistantships and fellowships are available.

650	Cellular and Histotoxicology	(2)
768	Residence Credit for the Master's Degree	(1-6)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Veterinary Science Seminar	(1)
781	Correlative Pathology	(1-3)
782	Nutritional Pathology	(3)
783	Infectious Diseases of Domestic Animals	(3)
784	Advanced Veterinary Immunology	(2)
785	Advanced Veterinary Parasitology	(3)
786	Advanced Veterinary Pathology	(3)
787	Advanced Veterinary Pathology	(3)
791	Techniques in Veterinary Microbiology	(1-9)
792	Techniques in General Veterinary Pathology	(1-9)
793	Techniques in Veterinary Parasitology	(1-9)
794	Research in Nutritional Pathology	(1-9)

VOCATIONAL EDUCATION

Graduate Faculty: Professors Harold R. Binkley (Chairman), Herbert Bruce, Carl Lamar. Associate Professors Clayton Omvig (Acting Director of Graduate Studies), David McMurtry, Kathy Thornburg, Elaine Uthel (Acting Director of Graduate Studies).

Associate Members: Professors Bernard Fagan, Leonard McDowell. Associate Professors Ray Bernardi, Charles Byers. Assistant Professors Carolyn Litchfield, Kawanna Simpson, Rodney Tulloch.

The Department of Vocational Education offers programs leading to the Master of Arts in Education in the fields of business education and distributive education and the Master of Science in Education in the other areas (Plan A and Plan B available), the Specialist in Education (Ed.S.) degree, and the Doctor of Education (Ed.D.) degree. These advanced degree programs are designed to prepare candidates for leadership positions in vocational education—administration, curriculum, teacher education, research, and vocational guidance.

In addition, the Department offers programs leading to: (1) the professional certification of administrators, coordinators, and supervisors in vocational education and (2) certification of master's equivalent for Rank II classification (for Kentucky salary purposes) for teaching.

For further information, write the Department of Vocational Education.

MASTER'S DEGREE PROGRAMS IN VOCATIONAL EDUCATION

For a master's degree in vocational education (agricultural education, business education, distributive education, home economics education, industrial education, or vocational education) a minimum of 30 semester hours must be taken with a minimum of 12 hours of graduate work in professional education. At least 12 semester hours shall be taken from three of six areas—I through VI. This program qualifies the teacher for a Standard Certificate if he has completed a four-year undergraduate curriculum.

ALL PROGRAM SERVICE AREAS

- Area II: Research
EDP 522, EDP 656, and EDP 657.
- Area III: Advanced Study in Human Development
SOC 521, SOC 542, EDP 600, EDP 739, EDP 759.
- Area IV: Psychology of Learning
PSY 540, EDP 548, and EDP 658.
- Area VI: Foundations in Education
EDF 640, EDF 645, EDF 651, EDF 655, and EDF 661 (SOC 661).

AGRICULTURAL EDUCATION

- Area I: Curriculum Development
EDV 672, EDV 678, and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method in Teaching
EDV 670, EDV 671, EDV 675, EDV 679, EDV 680, EDV 681, EDV 682, EDV 695, EDV 779, and EDV 789.

BUSINESS EDUCATION

- Area I: Curriculum Development
EDV 615, EDV 626, EDV 678, EDC 714, and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method of Teaching
EDV 511, EDV 512, EDV 615, EDV 618, EDV 695, EDV 779, and EDV 789.

DISTRIBUTIVE EDUCATION

- Area I: Curriculum Development
EDV 517, EDV 678, and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method of Teaching
EDV 516, EDV 526, EDV 610, EDV 670, EDV 671, EDV 695, EDV 779, and EDV 789.

HOME ECONOMICS EDUCATION

- Area I: Curriculum Development
EDV 678, EDV 685, and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method of Teaching
EDV 670, EDV 684, EDV 686, EDV 687, EDV 695, EDV 779, and EDV 789.

INDUSTRIAL EDUCATION

- Area I: Curriculum Development
EDV 678 and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method of Teaching
EDV 516, EDV 518, EDV 529, EDV 537, EDV 670, EDV 693, EDV 695, EDV 779, and EDV 789.

VOCATIONAL EDUCATION

- Area I: Curriculum Development
EDV 517, EDV 672, EDV 678, EDV 685, and EDC 732.
- Area V: A Seminar in Instruction Devoted to Method of Teaching
EDV 516, EDV 518, EDV 528, EDV 615, EDV 670, EDV 693, EDV 695, EDV 779, and EDV 789.

THE Ed.S. AND DOCTORAL (Ed.D.) DEGREE PROGRAMS IN VOCATIONAL EDUCATION

For information, write the appropriate director of graduate studies in the Department of Vocational Education. See Graduate School section of Bulletin.

CERTIFICATION OF ADMINISTRATORS, SUPERVISORS AND COORDINATORS OF VOCATIONAL EDUCATION

For certification as an administrator, coordinator, or supervisor of Vocational Education the student must complete a minimum of 15 semester hours of graduate level courses above and beyond the course requirements for the 10-year teaching certificate. Courses are to be selected from those listed below, including at least one course in each of the four curriculum areas.

CURRICULUM AREAS AND COURSES

	Sem.	Hrs.
Organization and Administration of Vocational Education		
EDV 535 Principles and Philosophy of Vocational Education	2	
EDV 694 Administration of Vocational Education	3	

EDV 779 Seminar in Vocational Education 1-3

Administration and Supervision of Education Personnel	
EDA 633 Administration and Supervision of Instructional Programs	3
EDA 634 Administration of Educational Personnel (Required in this Area)	3
EDV 608 Internship in Vocational Education	3
EDV 693 Supervision in Vocational Education	3

Program Planning, Research, and Evaluation in Vocational Education	
EDV 529 Evaluation on Industrial and Distributive Education	2
EDV 695 Special Problems in Vocational Education	3
EDP 656 Methodology in Educational Research	3
EDP 660 Research Design and Analysis in Education	3

Vocational Guidance, Industrial Psychology, Human Relations	
EDP 764 Using Occupation and Educational Information in Counseling	3
EDV 523 Vocational Guidance	2-3
EDV 702 Career Development, Research Theories and Practice	2-3
PSY 540 Introduction to Industrial Psychology	3
PSY 541 Psychology of Industrial Personnel Procedure	3
PSY 545 Small Group Behavior	3
SOC 521 Industrial Sociology	3
SOC 542 Human Relations in Administration	3

Total 99

AGRICULTURAL EDUCATION

580 Materials and Methods for Teaching Vocational Agriculture	(3)
581 Adult-Farmer Schools and Young-Farmer Courses in Agriculture	(3)
583 Experience Programs in Vocational Agriculture	(3)
672 Determining Content in Vocational Agriculture	(3)
673 Program Development in Vocational Agriculture	(3)
675 Modern Problems in Agriculture Education	(3)
679 Adult Education in Agriculture	(3)
680 Directing Occupational Experience in Agriculture	(3)
681 Teaching Farm Shop	(3)
682 Education in Agriculture for Young Adults	(3)

BUSINESS EDUCATION

511 Teaching Secretarial Subjects	(3)
512 Teaching Bookkeeping and Accounting	(3)
513 Teaching Typewriting and Clerical Practice	(3)
514 Teaching General Business Subjects in the Secondary Schools	(3)
615 Problems in Business Education	(3)
618 The Social Business Subjects in High School	(3)
623 Administration and Supervision of Business Education	(3)

- 626 Classification and Possible Use of Community Resources in Business Education (3)

BUSINESS AND OFFICE EDUCATION

(BOE is the abbreviation for these courses.)

- 445 Office Administration and Services (3)
519 Records Management (3)
556 Business Research Reports (3)
640 Advanced Methods in the Secretarial Subjects (3)

HOME ECONOMICS EDUCATION

- 540 Problems in Teaching Reading (3)
EDC 542 Children's Literature (3)
EDC 542 Teaching in the Kindergarten (3)
EDC 544 Utilization of Educational Media (3)
586 Teaching Home Economics in the Secondary School (3)
588 Adult Education in Home Economics (3)
590 Problems in Home Economics Education (3)
610 Simulated Occupational Experience Program in Distributive Education (2-4)
683 Current Problems in Home Economics Education (3)
684 Current Trends in Home Economics Education (3)

- 685 Home Economics Curriculum Construction (3)
686 Evaluation in Home Economics Education (3)
687 Home Economics Supervision (3)

VOCATIONAL EDUCATION

- 516 Problems of the Coordinator in Vocational Education (2-3)
523 Vocational Guidance (2-3)
535 Principles and Philosophy of Vocational Education (2-3)
608 Internship in Vocational Education (6)
641 Appraisal of Current Literature in Vocational Education (3)
670 Method in Teaching Vocational Education (3)
671 Youth Organizations in Vocational Education (3)
678 Selecting Teaching Materials (3)
693 Supervision in Vocational Education (3)
694 The Administration of Vocational Education (3)
695 Special Problems in Vocational Education (3)
702 Career Development: Research, Theories and Practices (2-3)
768 Residence Credit for the Master's Degree (1-6)
769 Residence Credit for the Doctor's Degree (0-12)

- 779 Seminar in Vocational Education (1-3)
789 Independent Work in Vocational Education (1-3)
799 Research in Vocational Education (1-3)

DISTRIBUTIVE EDUCATION

- 515 Problems in Distributive Education (2-3)
517 Determining Teaching Content in Distributive Education (2-3)
526 Organization and Operation of Adult Programs in Distributive Education (3)
528 Technique of Teaching Distributive Education (2-3)

INDUSTRIAL EDUCATION

- 518 Methods in Industrial Education (2)
524 Modern Industrial Analysis (2)
529 Evaluation in Industrial and Distributive Education (2)
534 Organization and Operation of Part-Time and Evening Classes (2)
536 Surveys in Industrial Education (2)
537 Special Problems in Industrial Education (1-3)
540 Supervision of Student Teaching in Industrial Education (2)

Course Listings by Semester

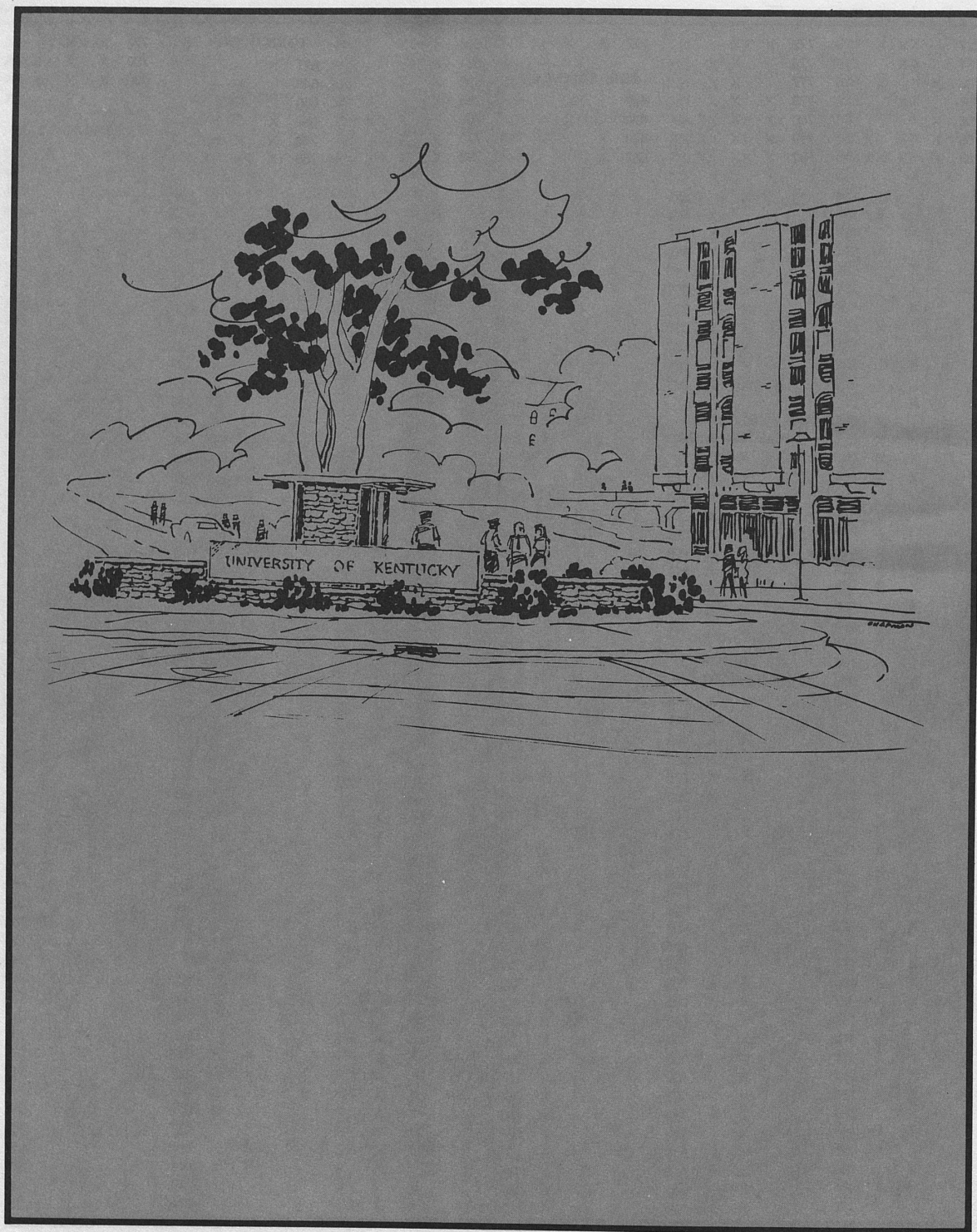
This listing is not intended to reflect all graduate courses offered during any semester but to serve only as a guide for scheduling selected courses.

The following symbols are used — F: fall semester; S: spring semester; SS: summer session.

Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS
ADMINISTRATION				534		X		618	X			529		X		572		X		770	X	X	X
SUPERVISION				536	X			619		X		531	X			581		X		799	X	X	X
601		X	X	538		X		640	X	X		532		X		COMPUTER SCIENCE				CURRICULUM AND INSTRUCTION			
602	X		X	562	X			769	X	X	X	533	X			415	X			411	X	X	
603		X		564		X		CHEMICAL ENGINEERING				540	X			416	X			500	X	X	
604	X			580	X			412	X			543		X		420	X			501		X	X
608	X	X		600	X			422		X		545	X			421	X	X	X	511	X	X	X
628	X	X		630	X			430	X			550	X	X		472	X	X		521	X	X	
629	X		X	660		X		431	X			553	X			502	X	X		522	X	X	
633	X		X	662		X		432		X		554	X			505		X		524	X	X	
634		X	X	664		X		455	X			555	X	X		510	X			525	X	X	
635		X	X	680	X			456		X		559		X		520	X	X		533	X		X
639		X	X	681			X	462	X			568	X			538	X	X		534		X	
649	X			683			X	505	X			621	X			540	X	X		538			X
769	X	X	X	684		X		515	X			623		X		541		X		540	X		
771	X	X	X	685	X			520	X			624	X			562		X		544	X	X	X
772	X	X	X	686	X			530		X		625	X			570	X	X		545	X	X	X
785	X	X	X	687		X		550	X			626		X		605	X			549		X	
792	X			688		X		552		X		628		X		612	X	X	X	550	X	X	X
AGRICULTURAL ECONOMICS				768	X	X	X	555		X		629	X			650	X	X		564	X	X	
408		X		769	X	X	X	560		X		635		X		670		X		606		X	X
480	X	X	X	771	X	X		565		X		639		X		682	X			607	X		
501		X		780	X	X	X	570	X	X		640	X			683		X		608		X	
502		X		781	X	X	X	580		X		641	X			685	X	X		619	X	X	X
531	X			782	X	X	X	615	X			643		X		690	X			620	X	X	X
532	X			790	X	X	X	617		X		645	X			768	X	X	X	641	X		
534		X		791	X	X	X	619	X			646			X	CROP SCIENCE				642		X	
535		X		792	X	X	X	621		X		648			X	404	X			643		X	
580	X	X	X	BEHAVIORAL SCIENCE				625		X		652		X		406	X			646			X
590	X		X	527		X		631	X			655		X		408	X			670		X	X
660		X		529		X		633	X			662	X			412	X			712	X	X	X
768	X	X	X	546		X		635		X		663	X			502	X			714	X	X	X
769	X	X	X	670	X			637			X	664		X		510		X		724	X	X	X
770	X	X	X	738	X			638	X			669	X			554		X		730	X	X	X
780	X	X	X	761	X			642	X			674	X			556		X		745		X	
ANIMAL SCIENCES				764	X			643		X		678	X			560		X		747	X		
404		X		765	X			650	X			681		X		599	X	X	X	748		X	
406	X	X		766	X			665	X			683	X			620	X			757			X
408	X			767	X	X	X	671		X		686	X			630	X			768	X	X	X
410	X			772		X		680			X	691		X	X	658		X		769	X	X	X
412		X		776		X		CIVIL ENGINEERING				692	X			666	X			777	X	X	X
420	X			777		X		425	X	X		693		X		678		X		780	X	X	X
430		X		778	X			435		X		694	X			697	X	X	X	781	X	X	X
442		X		790	X	X	X	487	X	X		695		X		730		X		790	X	X	X
462	X			BIOCHEMISTRY				489		X		MINING ENGINEERING				732	X			791	X	X	X
470	X	X		401	X			492	X	X		451	X			734		X		DIPLOMACY AND INTERNATIONAL COMMERCE			
530	X			501	X			515	X			551	X			736		X					
532		X		502		X		523		X		562		X		768	X	X	X				
				503		X		528		X						769	X	X	X				
				517			X																

86

Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS	Course	F	S	SS
727		X		772	X	X		797	X	X	X	566		X		TOXICOLOGY				770	X	X	
731		X		773		X						581	X			521	X			780	X	X	X
738	X			777		X		SOIL SCIENCE				599	X	X	X	640		X		790	X	X	X
751		X		779	X	X		468		X		768	X	X	X	650		X					
766	X			780	X	X	X	470		X		769	X	X	X	680	X						
768	X	X	X	790	X	X	X	473	X			770	X	X		768	X	X	X				
769	X	X	X	792	X	X	X	562	X			799	X	X	X	769	X	X	X				



Index

(For specific academic programs see Programs of Graduate Studies on page 33)

—A—

Academic Common Market	6
Academic Load	13
Add/Drop	13
Administrative Organization	89
Admission	8
Admission to Candidacy	12
Advanced Degrees Conferred	6
Advanced Degrees for Faculty Members	11
Advanced Degrees, General Requirements	12
Advanced Study and Research by Visiting Scholars	21
Advisers and the Special Committee	16
Appalachian Center	22
Assistantships, Research and Teaching	23

—C—

Calendar, University	3
Changing Programs	14
Classification	12
Copyright	17
Correspondence Courses	15
Course Listings by Semester	85
Courses and Curricula	15
Credit Equivalence	13
Credits, Transfer of	15

—D—

Degrees Offered	6
Degrees Requirements	14, 25
Diplomas	14
Directors of Graduate Studies	8, 33
Dismissal	11
Dissertation	17
Doctor of Business Administration	18
Doctor of Education	20
Joint-Doctoral Program with State Universities	18
Requirements	18
Doctor of Musical Arts	18
Doctor of Philosophy (Education)	21
Doctor of Philosophy	
Requirements	16
Doctoral Residence	14

—E—

Examinations, Final	15
Examinations, Master's Degrees	15, 18
Examinations, Qualifying	17

—F—

Fees	14
Fellowships Non service	22

Fellowships, Post-doctoral	21
Fifth Year Program (Education)	19
Final Examination, Doctor of Philosophy	18
Final Examination, Master's degree	15
Financial Support, Miscellaneous	23
Food Services	9
Foreign Applicants	9
Foreign Language Requirement	16

—G—

Grade—Point Average	12
Grades	13
Graduate Center	22
Graduate Council	7, 23
Graduate Courses	12
Graduate and Professional Student Association	23
Graduate Management Admissions Tests	8
Graduate Record Examination	12
Graduate School Fellowships	21, 22
Graduate School, organization of	7
Graduate School Programs	33
Graduate Seniors as Part-Time Graduate Students	11
Graduate Work, College of Education	19
Graduation	14
Graduate Students, Part-time	11
Graduate Students, Unclassified	11

—H—

Health Service	8, 10
Housing	9

—J—

Joint Doctoral Program	18
------------------------	----

—L—

Language Requirements	17
Libraries	11

—M—

Major Subjects	16
Master's Degree	
Master of Arts in Education	19
Master of Science in Education	19
Master of Arts and Master of Science, Requirements	
Plan A	15
Plan B	16
Medical and Graduate Studies Combined	18
Minor Subjects	16

—N—

Non-Service Fellowships	22
-------------------------	----

—O—

Oak Ridge Associated Universities	
Research Program	22

—P—

Part-time Graduate Students	11
Post-doctoral Fellowships	21
Probation, Scholastic	11
Programs and Directors of Graduate Studies	33

—Q—

Qualifying Examination	17
------------------------	----

—R—

Rank II, Rank I (Education)	19
Registration	12
Readmission	11
Research Program at Oak Ridge	22
Research Assistantships	23
Residence Requirements	14, 17

—S—

Scholastic Probation	11
Short Courses	14
Southern Regional Training Program in	
Public Administration	22
Special Committees	16
Specialists in Education, Requirements	21
Student Association, Graduate and Professional	23
Student Responsibility	8

—T—

Teaching Assistantships	23
Thesis	15
Time Limit for Degrees	14
Transfer of Credits (Master's degree)	15

—U—

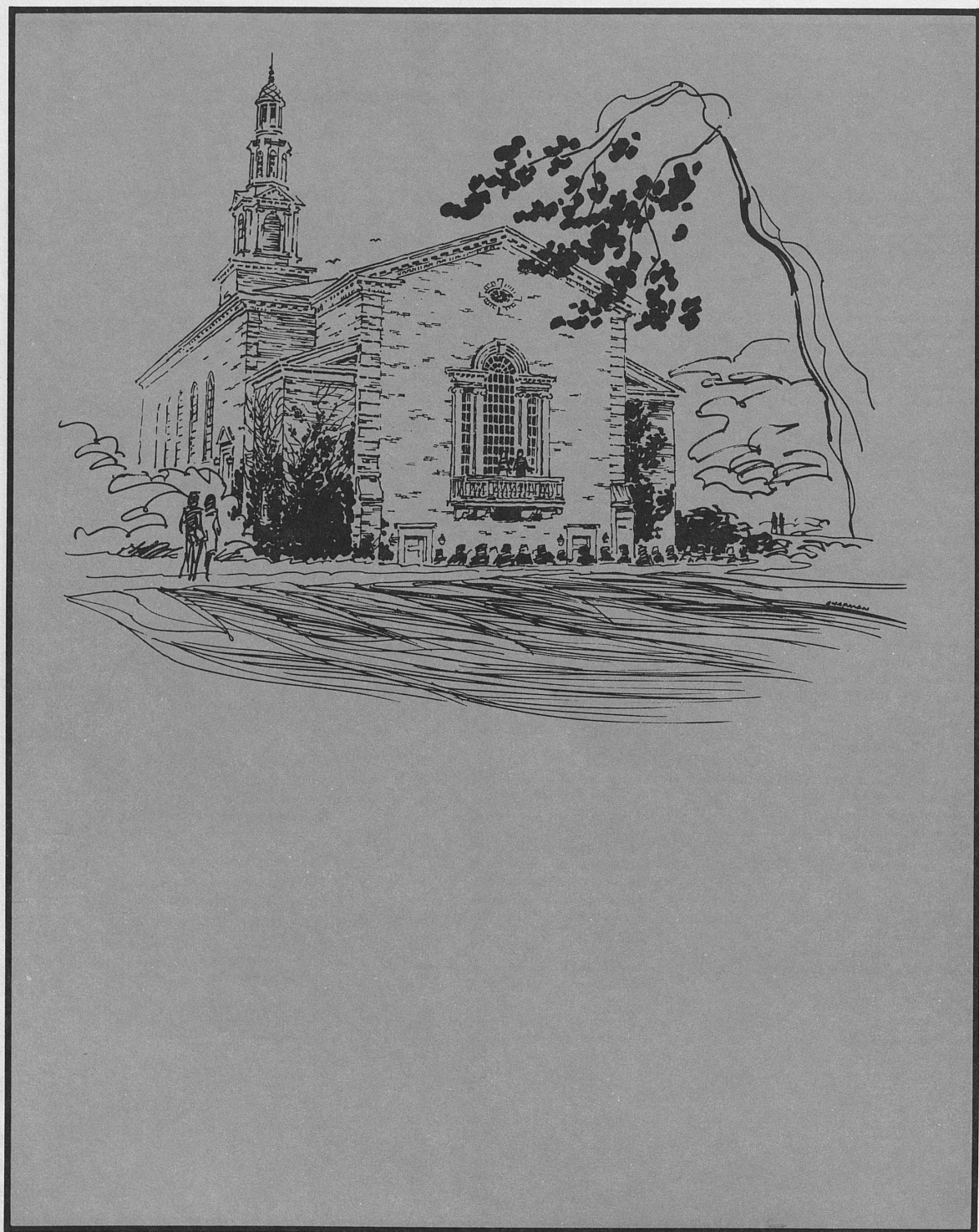
UK-NKU Graduate Center	22
Unclassified Graduate Students	11

—V—

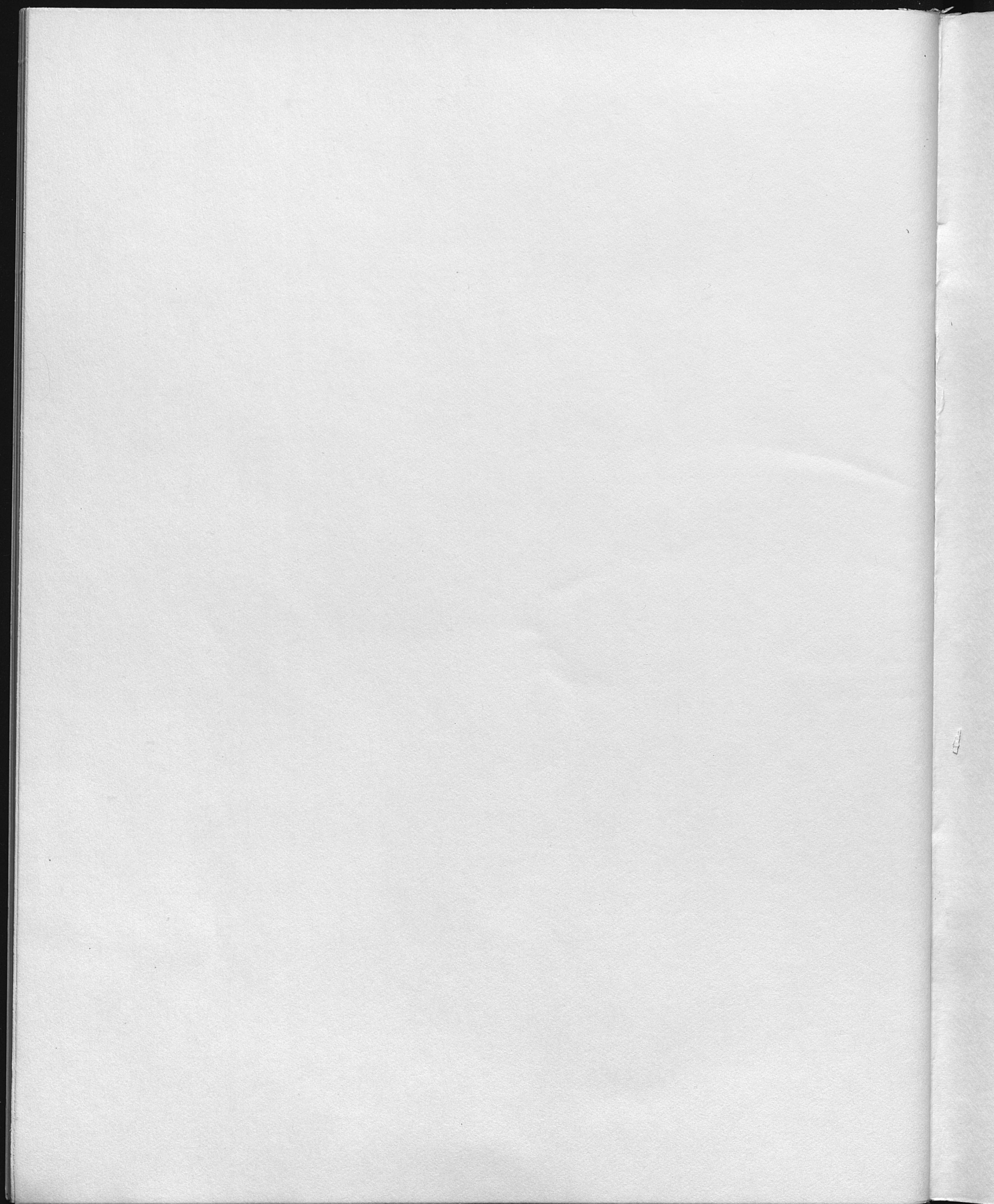
Visiting Scholars	21
Visiting Students	14

—W—

Withdrawal	13
------------	----



Notes



SPECIAL FOURTH CLASS
BOOK RATE

