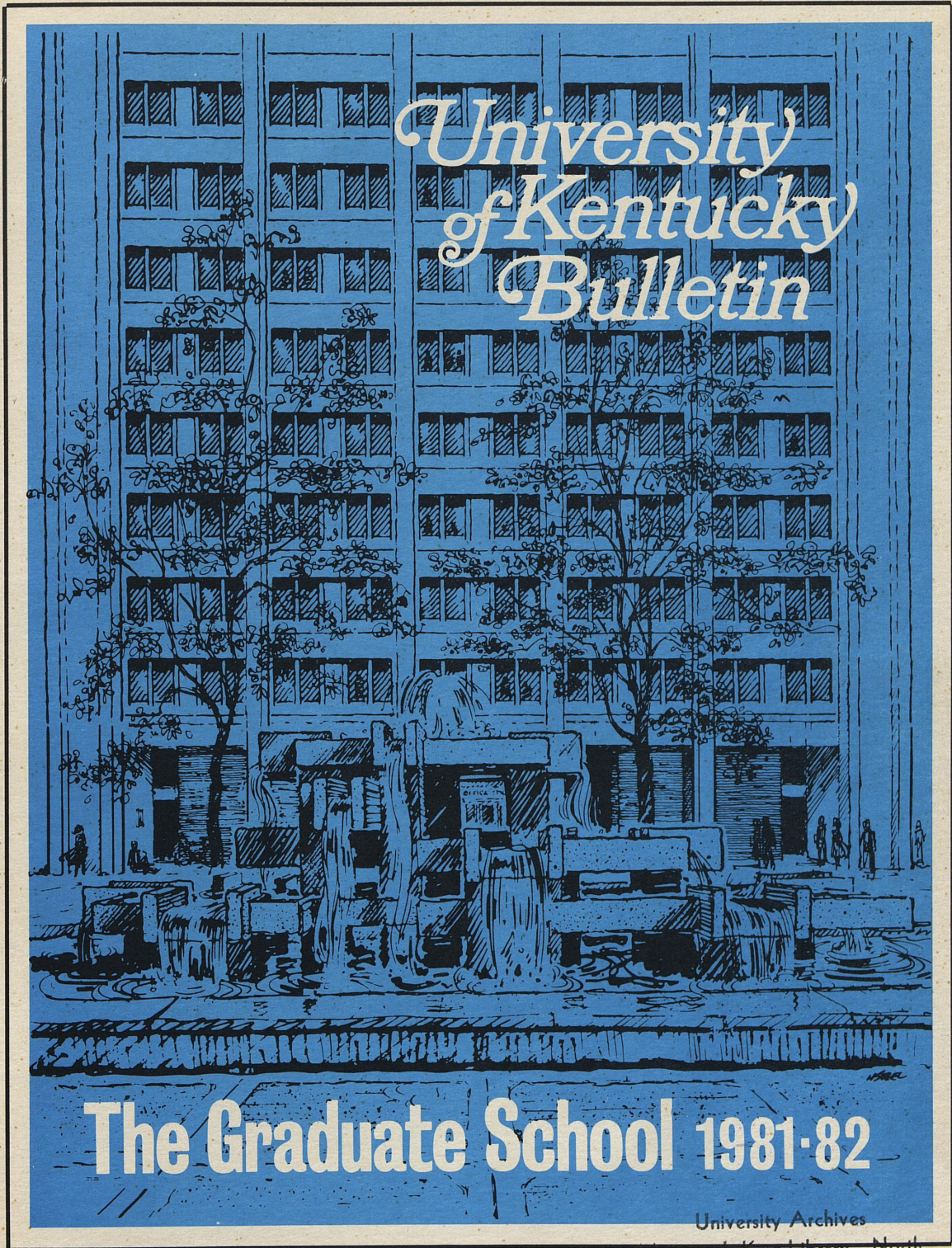
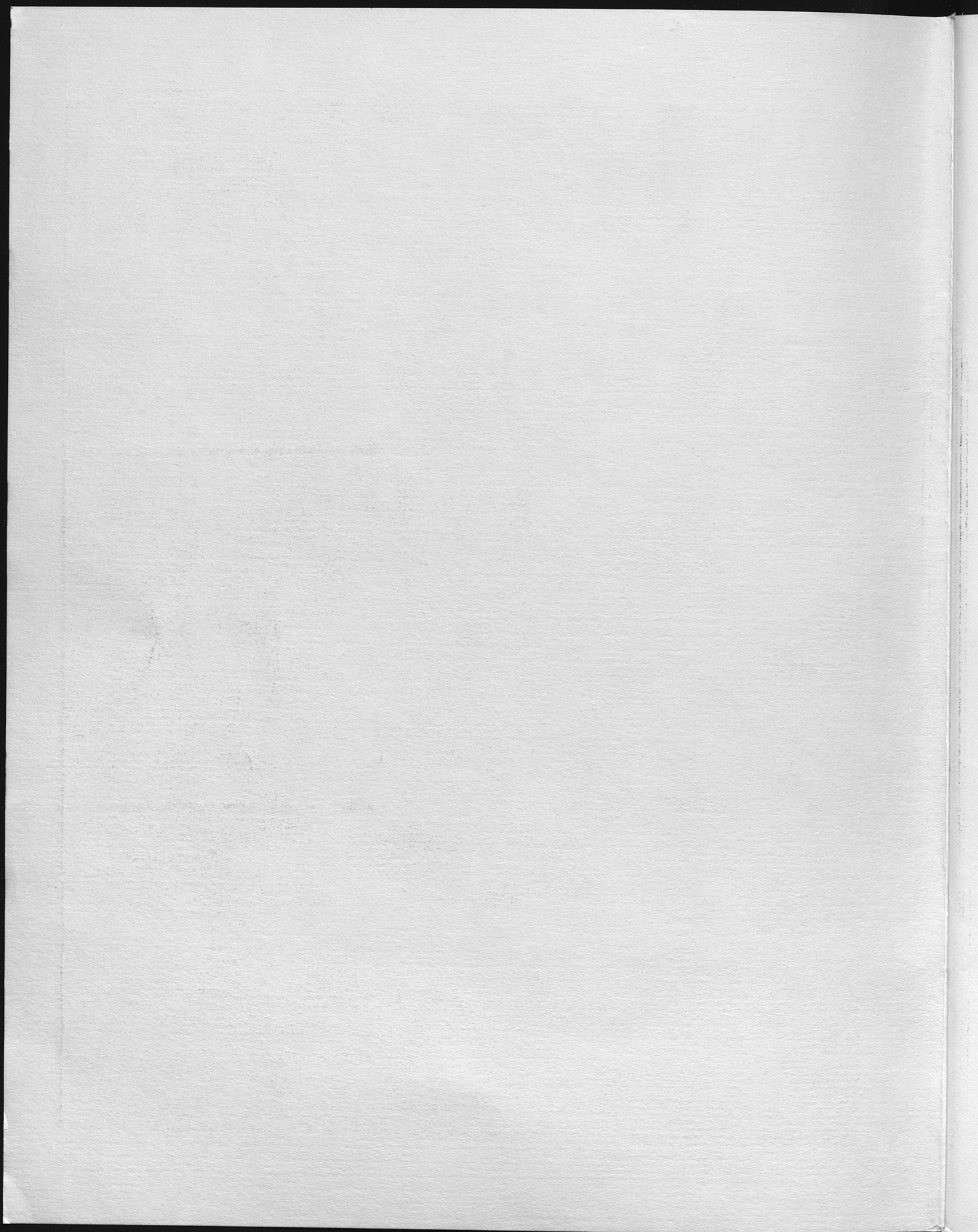


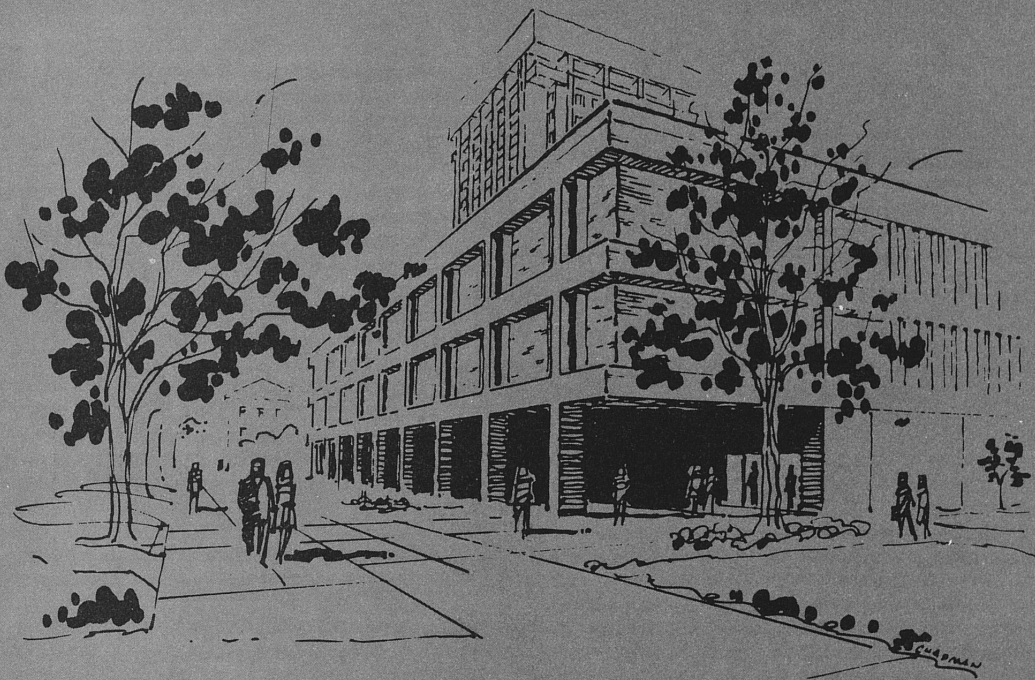
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The Graduate School 1981-82

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1981-82
The Graduate School
University of Kentucky Bulletin

VOLUME 73

SUMMER 1981

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, and 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.

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Calendar

Students should check the *Schedule of Classes* each semester for any calendar changes which may have been approved after publication of this Bulletin.

1981 FALL SEMESTER

July 24—Friday—Deadline for applying for admission or readmission to The Graduate School for the 1981 Fall Semester
August 24—Monday—Registration for new students who have not advance registered
August 25—Tuesday—Centralized add/drop for Advance Registered Students
August 25—Tuesday—Last day a student may officially drop a course or cancel registration with the Registrar for a full refund of fees
August 26—Wednesday—Class work begins
August 26-September 1—Wednesday through Tuesday—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 1—Tuesday—Last day to enter an organized class for the Fall Semester
September 1—Tuesday—Last day to officially withdraw from the University and receive an 80 percent refund
September 7—Monday—Labor Day (Academic Holiday)
September 9—Wednesday—Last day for payment of registration fees in order to avoid cancellation of

registration.
September 9—Wednesday—Last day for new students to pick up ID cards from Photographic Services in order to avoid replacement fee
September 16—Wednesday—Last day to change grading option (pass/fail to letter grade or letter grade to pass/fail; credit to audit or audit to credit)
September 16—Wednesday—Last day to drop a course without it appearing on the student's transcript
September 18—Friday—Last day for reinstatement of students cancelled for non-payment of registration fees. Requires payment of registration fees plus \$50 reinstatement fee.
September 24—Thursday—Last day for filing an application for a December degree in College Dean's office
October 19—Monday—Last day to drop a course
October 19—Monday—Last day to withdraw from the University or reduce course schedule and receive any refund
October 19—Last day to withdraw from the University or reduce course schedule and receive any refund
October 26—Monday—Last day to pay thesis/disserta-

tion fees for a December degree in Billings and Collections office
November 9-18—Monday through Wednesday—Advance registration for 1982 Spring Semester
November 19—Thursday—Last day to schedule a final examination in The Graduate School for candidates for a December 1981 degree
November 26-28—Thursday through Saturday—Thanksgiving Holidays (Academic Holidays)
December 3—Thursday—Last day to sit for a final examination for candidates for a December 1981 degree
December 11—Friday—Deadline for applying for admission or readmission to the Graduate School for the 1982 Spring Semester
December 11—Friday—End of class work
December 14-18—Monday through Friday—Final Examinations
December 18—Friday—Last day to submit a thesis/dissertation to The Graduate School for candidates for a December 1981 degree
December 18—Friday—End of Fall Semester
December 21—Monday—Final deadline for submission of grades to the Registrar's Office by 4 p.m.

1982 SPRING SEMESTER

January 11—Monday—Registration for new students who have not advance registered
January 12—Tuesday—Centralized add/drop for advance registered students
January 12—Tuesday—Last day a student may officially drop a course or cancel registration with the Registrar for a full refund of fees
January 13—Wednesday—Class work begins
January 13-19—Wednesday through Tuesday—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.
January 19—Tuesday—Last day to enter an organized class for Spring Semester
January 19—Tuesday—Last day to officially withdraw from the University and receive an 80 percent refund
January 26—Tuesday—Last day for new students to pick up ID cards from Photographic Services in order to avoid replacement fee
January 26—Tuesday—Last day for payment of registration fees in order to avoid cancellation of registration
February 2—Tuesday—Last day to drop a course

without it appearing on the student's transcript
February 2—Tuesday—Last day to change grading option (pass/fail to letter grade or letter grade to pass/fail; credit to audit or audit to credit)
February 4—Thursday—Last day for reinstatement of students cancelled for non-payment of registration fees. Requires payment of registration fees plus \$50 reinstatement fee.
February 11—Thursday—Last day for filing an application for a May degree in College Dean's office
March 4—Thursday—Last day to drop a course
March 4—Thursday—Last day to withdraw from the University or reduce course schedule and receive any refund
March 15—Monday—Last day to pay thesis/dissertation fees for a May degree in Billings and Collections office
March 15-20—Monday through Saturday—Spring vacation (Academic Holidays)
April 8—Thursday—Last day to schedule a final examination in The Graduate School for candidates for May 1982 degree
April 10—Saturday—Last day to apply to Graduate Admissions Office for admission and readmission for 1982 4-Week Summer Session

April 12-21—Monday through Wednesday—Advance registration for 1982 Fall Semester and both Summer Sessions
April 22—Thursday—Last day to sit for a final examination for candidates for a May 1982 degree
April 30—Friday—Last day to submit dissertation to The Graduate School for doctoral candidates who wish to receive a diploma at Commencement
April 30—Friday—End of class work
May 3-7—Monday through Friday—Final Examinations
May 7—Friday—Last day to submit thesis/dissertation to The Graduate School for candidates for a May 1982 degree
May 7—Friday—End of 1982 Spring Semester
May 8—Saturday—Commencement Day
May 10—Monday—Last day to apply to Graduate Admissions Office for admission and readmission for the 1982 3-Week Summer Session
May 10—Monday—Final deadline for submission of grades to the Registrar's Office, 4 p.m.
July 23—Monday—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1982 Fall Semester.

1982 FOUR-WEEK INTERSESSION

- April 10—Saturday**—Last day to apply to the Graduate Admissions Office for admission and readmission for 1982 4-Week Summer Session
- May 10—Monday**—Registration for new students who have not advance registered
- May 10—Monday**—Last day a student may officially drop a course or cancel registration with the Registrar for a full refund of fees
- May 10—Monday**—Last day to apply to Graduate Admissions Office for admission and readmission for the 1982 8-Week Summer Session
- May 11—Tuesday**—Class work begins
- May 11-14—Tuesday through Friday**—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.
- May 14—Friday**—Last day to enter an organized class for the Four-Week Intersession
- May 14—Friday**—Last day to officially withdraw from the University and receive an 80 percent refund
- May 17—Monday**—Last day to drop a course without a grade
- May 17—Monday**—Last day to change from grading option (pass/fail to letter grade or letter grade to pass/fail; credit to audit or audit to credit)
- May 24—Monday**—Last day to drop a course
- May 24—Monday**—Last day to withdraw from the University or reduce course schedule and receive any refund
- May 24—Monday**—Last day to pay registration fees in order to avoid cancellation or registration
- May 31—Monday**—Memorial Day (Academic Holiday)
- June 3—Thursday**—Last day for reinstatement of students cancelled for non-payment of registration fees. Requires payment of registration fees plus \$50 reinstatement fee.
- June 8—Tuesday**—Final Examinations
- June 8—Tuesday**—End of Four-Week Intersession
- June 11—Friday**—Final deadline for submission of grades to the Registrar's Office by 12 noon.
- July 23—Friday**—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1982 Fall Semester

1982 EIGHT-WEEK SUMMER SESSION

- April 10—Saturday**—Last day to apply to the Graduate Admissions Office for admission and readmission for 1982 4-Week Summer Session
- May 10—Monday**—Last day to apply to Graduate Admissions Office for admission and readmission for the 1982 8-Week Summer Session
- June 9—Wednesday**—Registration for new students who have not advance registered
- June 9—Wednesday**—Last day a student may officially drop a course or cancel registration with the Registrar for a full refund of fees
- June 10—Thursday**—Class work begins
- June 10-14—Thursday through Monday**—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
- June 14—Monday**—Last day to enter an organized class for the 1982 Eight-Week Summer Session
- June 14—Monday**—Last day to officially withdraw from the University and receive an 80 percent refund
- June 21—Monday**—Last day to change grading option (pass/fail to letter grade or letter grade to pass/fail; credit to audit or audit to credit)
- June 21—Monday**—Last day to drop a course without it appearing on the student's transcript
- June 23—Wednesday**—Last day to pay registration fees in order to avoid cancellation of registration
- June 24—Thursday**—Last day for filing an application for an August degree in College Dean's office
- July 5—Monday**—Independence Day (Academic Holiday)
- July 6—Tuesday**—Last day for reinstatement of students cancelled for non-payment of registration fees. Requires payment of registration fees plus \$50 reinstatement fee.
- July 9—Friday**—Last day to pay thesis/dissertation fees for an August degree in Billings and Collections office
- July 8—Friday**—Last day to drop a course
- July 8—Friday**—Last day to withdraw from the University or reduce course schedule and receive any refund
- July 14—Thursday**—Last day to schedule a final examination in The Graduate School for candidates for an August 1982 degree
- July 23—Friday**—Last day to apply to the Graduate Admissions Office for admission and readmission to the 1982 Fall Semester
- July 28—Wednesday**—Last day to sit for a final examination for candidates for an August 1982 degree
- August 5—Thursday**—Last day to submit a thesis/dissertation to the Graduate School for candidates for an August 1982 degree
- August 5—Thursday**—Final Examinations
- August 5—Thursday**—End of Eight-Week Session
- August 9—Monday**—Final deadline for submission of grades to the Registrar's Office by 12 noon

Note: For Graduation and Diploma information see pages 14 and 15.



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

Wimberly C. Royster, Ph.D., Dean

Ronda Connaway, D.S.W., Associate Dean

Bradley Canon, Ph.D., Associate Dean

William Ehmann, 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: Southern Regional Education Board, 130 Sixth Street N.W., Atlanta, Georgia 30313.

Degrees Conferred

Doctor of Philosophy Offered in following fields:

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

Master of Arts Offered in following fields:

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

Master of Science Offered in following fields:

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

Master of Science in Agriculture Offered in following fields:

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

Other Degrees

Doctor of Business Administration	Master of Fine Arts	Engineering	Master of Science in Library Science	Master of Science in Nursing
Doctor of Education	Master of Music	Master of Science in Clinical Nutrition	Master of Science in Mechanical Engineering	Master of Science in Operations Research
Doctor of Musical Arts	Master of Public Administration	Master of Science in Dentistry with Specialty in Orthodontics	Master of Science in Radiological Medical Physics	Master of Science in Radiological Health—Specialty
Master of Arts in Education	Master of Rehabilitation Counseling	Master of Science in Electrical Engineering	Master of Science in Metallurgical Engineering and Materials Science	Master in Civil Engineering
Master of Arts in Teaching (Mathematics)	Master of Science in Accounting	Master of Science in Engineering Mechanics	Master of Science in Mining Engineering	Master of Interior Design
Master of Arts in Textiles and Clothing	Master of Science in Agricultural Engineering	Master of Science in Forestry	Master of Science in Nuclear Engineering	Master of Nutritional Sciences
Master of Science in Education	Master of Science in Chemical Engineering	Master of Science in Family Studies		Master of Social Work
Master of Business Administration	Master of Science in Civil			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 its 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 chairs 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. Demonstration participation in the graduate teaching and research 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.

The responsibilities peculiar to regular members of the Graduate Faculty are:

1. Guidance of graduate student research and study to its completion. The finished work should meet or exceed accepted standards for publication, dissemination or performance with the particular discipline and
2. Participation in the formulation of graduate curricula and policy.

The Graduate Dean has the responsibility to appoint and monitor the progress of Associate Members of the Graduate Faculty.

The statutory requirement of promotion or termination at the end of the five-year probationary term should be followed. A terminated Associate Member may at any later time be considered and promoted to Full Membership, but not be reappointed to Associate Membership. Associate Membership for additional terms may be permitted by the Dean of the Graduate School in appropriate master's level programs.

Membership in the Graduate Faculty should be restricted to persons who both satisfy the membership criteria and can assume the responsibilities in a particular

program set forth above. At-Large Members (those not directly associated with a graduate program) should be appointed only in such special cases where their services are requested and can contribute to a particular program.

At-Large Associate Membership should not be instituted.

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 faculty members.

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. The graduate programs are administered in the interest of efficient instruction and the highest attainment possible on the part of each graduate student and students are advised with regard to their studies and the requirements of The Graduate School. 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 ex officio members of all committees of the Graduate Faculty.

The Graduate Council

The Graduate Council is composed of 14 members and the Dean of The Graduate School, who serves as chairs. There are 12 faculty representatives.

The composition of the Graduate Council is as follows: One member from the College of Agriculture, three members from the Colleges of Arts and Science and Fine Arts, one member from the College of Engineering, two members from the College of Education, one member from the Colleges of Medicine and Dentistry, one member from the Colleges of Allied Health, Communications, Home Economics, Library Science, Nursing and Social Professions, and two members appointed by the Dean of The Graduate School.

Members representing a college or a combination of colleges are elected by The Graduate Faculty in the respective colleges.

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 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 propos-

als 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 chair. 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 inform 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 to offer a graduate program; and in exceptional cases a department may be divided into two or more areas to offer programs in the respective areas.) The Directors of Graduate Studies for the various programs 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. Programs 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.

Confidentiality of Student Records

In accordance with the Family Education Rights and Privacy Act of 1974, University of Kentucky students have the right to review, inspect, and challenge the accuracy of information kept in a cumulative file by the institution unless the student waives this right in writing. It also insures that records cannot be released in other than emergency situations without the written consent of the student, except in the following situations:

- A. to other school officials, including faculty within the educational institution or local educational agency who have legitimate educational interests;
- B. to officials of other schools or school systems in which the student intends to enroll, upon condition that the student be notified of the transfer, receive a copy of the record if desired, and have an opportunity for a hearing to challenge the content of the record;
- C. to authorized representatives of 1) the Comptroller General of the United States, 2) the Secretary, 3) an administrative head of an education agency or 4) state educational authorities;
- D. in connection with a student's application for, and receipt of, financial aid;
- E. where the information is classified as "directory information." The following categories of information have been designated by the University as directory information: name, address, telephone listing, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational institution attended by the student. If you do not wish such information released without your consent you should notify the Registrar's Office prior to the first day of classes.

Questions concerning this law and the University's policy concerning release of academic information may be directed to the Registrar's Office, 257-4623.

Admission

The University of Kentucky is committed to a policy of providing educational opportunities to all qualified students regardless of economic or social status, and will not discriminate on the basis of race, color, sex, marital status, beliefs, age, national origin or handicap.

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 official scores on the verbal and quantitative portions of the Graduate Record Examination. (See Provisional Admission.) 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.

New students applying for admission must have two official transcripts sent by each institution of higher learning previously attended. All transcripts must be sent to The Graduate School Office.

To be official, records must bear the Registrar's signature and/or official seal of the issuing institution. A summary of credit transferred and recorded on the transcript issued by the institution granting the degree will not suffice. Graduates of the University of Kentucky must request transcripts from the Registrar's Office in the Gillis Building.

Application forms can be obtained by writing:

**The Graduate School
Room 351, Patterson Office Tower
University of Kentucky, Lexington, Kentucky
40506**

Applications must be submitted no later than one month before the beginning of the term the applicant intends to begin graduate work. (See Calendar).

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 and departmental approval. *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.

Provisional Admission

Students wishing to pursue an advanced degree who are temporarily ineligible for regular graduate admission status may be recommended by the Director of Graduate Studies for provisional admission status for one or more of the following reasons:

1. Missing transcripts or other requirements for admission such as letters of recommendation;
2. Temporary waiver of the Graduate Record Examination (not to exceed one semester);
3. Deficiencies determined by the program;
4. Temporary ineligibility for regular admission status

because program only reviews applications once a year;

5. Graduating University of Kentucky seniors lacking no more than six hours for graduation; the consent of the college dean and the Dean of the Graduate School and approval of the Director of Graduate Studies are necessary. The student may take no more than 12 credit hours and must complete the undergraduate degree during the semester in which they enroll in the provisional status.

Provisional status is permitted for a maximum of one semester or up to 12 hours after which the work will be reviewed, and, within 30 days into the following semester, and on recommendation of the Director of Graduate Studies, the status will be moved automatically from provisional to regular program status, or removed from the provisional status entirely.

Health Service

The convenience of an on-campus health care facility, a low cost prepaid plan for outpatient services, and an excellent Blue Cross/Blue Shield hospitalization plan which now includes a broad major medical component—all are designed to make UK's total health plan attractive and economical and for graduate and professional students, both fulltime and parttime.

The Student Health Service is located in the Family Medical Center/Student Health Building (Annex No. 4) across Rose Street from University Hospital. Clinic hours are from 8 a.m. to 4:30 p.m. Monday through Friday and 8-11 Saturday morning. The Health Service is staffed with physicians, surgeons, psychiatrists and other health professionals who are specialists in the problems seen in a University population.

Health Fee. There are no "free" health services at UK, but a plan is available which enables students to pay a low health fee each semester. This fee entitles them to many services provided by the Student Health Service at no additional cost. In 1980-81 the fee was \$21 per semester. Basically, health fee coverage includes the outpatient care of illness: visits to clinicians, laboratory services, some medications, gynecological services, first aid care, preventive medicine services, mental health services, some Emergency Room services and more.

Fee-for-service. Students who do not pay the health fee may obtain services at the student clinic on a charge-for-service basis. There is a minimum visit charge for a student without the health fee. It was \$14 in 1980-81. *Non-student spouses* can use the Health Service on a fee-for-service basis. The minimum charge in 1980-81 was \$18 per visit.

Services provided in the Health Service that are traditionally covered by insurance plans (accident x-ray, surgical procedures) will be billed to the student's insurance carrier. UK students are expected to have insurance, and are responsible for any amount which insurance does not pay on these type charges.

Health fee benefits and conditions are described in detail in the Health Service Information Brochure that is available at the Graduate Office and the Health Service.

How to pay the health fee. Most students pay the health

fee at the same time they pay tuition. Information about how to pay fees and the deadlines for payment comes to all students from the University's Billing and Collections Office, Room 220, Service Building. It is important to read this information carefully because deadlines are strictly enforced. Any extension of the health fee deadline will be handled on an individual basis and must be cleared prior to the deadline date.

Health Insurance

As a service to students who need insurance of their own, the University has made arrangements for an excellent group insurance plan at reasonable student-age group rates to help cover the costs of hospitalization/accident/surgery care. The current plan is Blue Cross and Blue Shield with Major Medical. The plan provides year-round coverage wherever the student may be as long as the semi-annual premium payments are maintained. There are no exclusions for pre-existing conditions except for pregnancy which is only covered after nine consecutive months enrollment under the family option.

There is (1) a single option which covers only the student and provides no maternity benefits, (2) a two-party option which covers the student and spouse or the student and one dependent child under age 19 (this option provides no maternity benefits), and (3) a family option which covers the student, spouse, and any children under age 19 and provides maternity benefits after nine consecutive months enrollment under the family option.

Information about the student group insurance plan is mailed to all pre-registered entering students before they arrive on campus. The enrollment period for any UK student (full or part time) is the first 30 days of the fall and spring semesters. Information is also available through the insurance office of the Student Health Service (phone (606) 233-6291) and through the Graduate Office and the International Student Office.

IMPORTANT HEALTH SERVICE PHONE NUMBERS

General Information:	233-5823
Medical and Surgical appointments:	233-6143
Mental Health Service appointments:	233-5511
Health fee information:	233-6465
Insurance information:	233-6291
Billing problems:	233-5424
Administrator and ombudsman:	233-5335

Confidentiality. All Health Service records are strictly confidential and cannot be released to anyone without the student's written authorization.

Counseling and Testing Center

The University Counseling and Testing Center has a staff of trained psychological counselors whose primary function is helping students work through educational, vocational and personal concerns. Some typical concerns for graduate students include: learning to read and think more critically, time management; difficulties in decision-making, career and life planning, quality of interpersonal relationships, feelings of depression, anxiety, loneliness, and other issues of a personal nature. All counseling sessions are voluntary and confidential. Tests of intelligence, achievement, personality, vocational interests, study skills

and others may be used by the student to aid in self-understanding.

In addition to counseling with individuals, the Center staff provides marital, family, and group counseling. Groups are arranged each semester and include both general counseling groups, in which students may work on a variety of issues, and special focus groups (assertiveness training, for example).

The University Counseling and Testing Center is certified by the International Association of Counseling Services as an agency providing approved counseling services. The services of the Center are available by appointment to all who are enrolled in the University as well as to faculty and staff. There are no fees for the testing or counseling of University-connected clients. Appointments and further information may be obtained by calling 258-8701 or by coming by the Center, 301 Mathews Bldg.

Housing

Graduate Student Housing

Apartments are available for both single and married graduate students. For information write to Student Housing, Cooperstown, Building C.

Off-Campus Housing

For information, write the Dean of Students Office, 5th Floor, Patterson Office Tower.

Food Services

The Food Services facilities at the University are in two categories—residence hall cafeterias and cash units. Blazer Cafeteria, Donovan Cafeteria and Kirwan-Blanding Commons Cafeteria serve students on prepaid meal plans.

The Student Center Cafeteria, Wildcat Grill, K-Lair Grill and Kirwan Blanding Grill are open on a cash basis to all students, faculty, staff and University guests. In addition, Food Services meal cards will be accepted at these locations on a cash basis. The schedule of hours for the various operations will be printed at the beginning of each semester.

Foreign Applicants

All non-U.S. citizens, except permanent residents of the U.S., should request an Application Form for International 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 sub-

jects taken and grades obtained. Grades **must** be listed in the indigenous system.

Applications will not be considered without official scores on the verbal and quantitative portions of the Graduate Record Examination (GRE). Business and Accounting applicants must substitute the Graduate Management Admissions Test (GMAT) for the GRE. If the Graduate Record Examination or the Graduate Management Admissions Test have not been taken write to the Educational Testing Service. Write Box 955, Princeton, NJ 08540, or Box 1502, Los Angeles, CA 95701, for information concerning the appropriate examination. The tests are administered five times throughout the year and test scores generally require six weeks for delivery. It is important, therefore, that the applicant take the appropriate test well in advance of the application deadline in order to allow ample time for scores to be received in this office.

Test scores presented (GRE, GMAT and TOEFL) must be sent directly to the University of Kentucky from ETS. Photocopies are not acceptable.

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 language is not English. The test is given four times each year. The TOEFL Bulletin 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 Intercultural Communications Agency (ICA), 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:

AMIDEAST
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
393, Canton Road
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 \$6500 available for **each** 12-month period of study. It is estimated that this amount will cover the cost of tuition fees (\$2447*), books and supplies (\$300), room and meals (\$3420), health insurance (explained below) and incidentals, for a single person.

The students must have on hand at the beginning of each registration period funds sufficient to pay for tuition, fees, room and board and health insurance. These costs are to be paid at the beginning of each term.

*Note: Fees subject to change without notice. Fees for Summer School are \$107 per credit hour.

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

Cooperstown Office
University of Kentucky
Lexington, Kentucky 40508

Little opportunity is available for incoming students to live in University Housing unless applications are made nine to 12 months in advance. Many students find it necessary to share a small apartment in the Lexington community.

Health Services

The University has an excellent health care program that is of special importance to foreign students. (See section on Health Service.)

Please note: UK international students must have hospitalization insurance that is payable in the United States. They are also responsible for any amount which insurance does not pay on these type of charges. Because of the extremely high cost of medical care, it is imperative that a student have insurance for him or herself, spouse, and children.

Health Report Form. The Certificate of Eligibility (Form 1-20) cannot be issued for admission until the Graduate School has received a completed health form indicat-

ing that the student has had a recent physical examination. Health Forms are mailed from the Graduate School prior to final admission.

(See also section on Health Service in this bulletin under Graduate Students.)

Application Deadline for Foreign Students. Applications for admission should reach the Admissions Office at least six months before the opening of the term the applicant intends to begin graduate work, 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 October 31 for all summer sessions.

All credentials should reach the Graduate School within 60 days after the application deadline.

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 graduate credit hours may be earned for the course. The registration fee of \$375 will cover cost of instruction and certain cultural activities connected with the course; it will not cover room and board (estimated at \$580 for the eight-week period). For further 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.

Post-Baccalaureate 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 post-baccalaureate graduate students.

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 9 hours of credit with a grade of A or B earned in the post-baccalaureate 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. (See section on Transfer of Credit.)

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

Post-baccalaureate students who wish to apply for a program from the post-baccalaureate status must write The Graduate School offices indicating the semester for which enrollment in the program is planned. Calendar deadlines in the front of this Bulletin should be observed.

Permission to enter any graduate class as a post-baccalaureate student will be granted only if the student meets the prerequisites and if space is available.

Graduating Seniors as Part-Time Graduate Students

Seniors 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 in the provisional status 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 students are to be applicants for a degree. *The total load of such students 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 students are allowed to register for part-time graduate work. Students applying for admission in The Graduate School under these conditions must fill out a petition form listing the course or courses to be taken to complete the undergraduate requirements. Petition forms are available in the Graduate School offices. The petition must be approved by both The Dean of the College and The Dean of the Graduate School.

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 full-time semester or the equivalent (9 hours) 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 readmission 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.

Changes in the Graduate School Requirements

When Graduate School or degree program requirements are changed after a course of study has begun, the students shall have the option of fulfilling either the old or new requirements.

If the students elect to fulfill the old requirements but finds that necessary resources (e.g., courses, instruction in particular skills) are no longer available, students may make reasonable substitutes with the approval of The Graduate School Dean upon recommendation of the Director of Graduate Studies.

In the event that students interrupt their work on a graduate degree (i.e., not enrolled) for one calendar year or more, The Graduate School Dean shall determine, upon recommendation of the Director of Graduate Studies, whether the old requirements or the new requirements shall apply. In the event students have not completed the requirements for the graduate degree five years after the effective date of a change in degree requirements, the new requirements shall apply unless determined otherwise by the Graduate School 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 1,792,000 volumes, 2,011,000 microform units, and 11,100 linear feet of manuscripts. The collection also includes 149,000 maps, 8300 music records, and 125,000 pictures, tapes and miscellaneous items. The Library currently subscribes to 22,440 periodicals including 284 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, coal, science and technology, agriculture, law, literature, 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 *Graduate Students and the Library*, 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 8 p.m. on Saturday, and 10 a.m. 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	257-1533
Art	King Library North (lower level)	257-3938
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 for one semester 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 stu-

dents, Rank 1, Fifth-year, and Post-baccalaureate students.)

The College of Business and Economics substitutes 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: 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 400G to 499G carry graduate credit for nonmajors only.

Courses numbered at the 600 or 700 level should be taught 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

Graduate courses (400G-799) may not be taken Pass/Fail.

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 (400G-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 12 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 attained 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

In order to receive a semester of full-time residence credit doctoral students must satisfactorily complete nine credit hours of graduate level work (exclusive of audit) in that semester. 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 six credit hours during the eight-week term (exclusive of audit). Doctoral students attending the summer term PRIOR to the Qualifying Examination must com-

plete 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 **before** the courses are taken in order to transfer credits earned. (See section on Transfer of Credits.)

Visiting Student status may be granted **only** to a student who is in good standing in a program.

Students who are enrolled in a Graduate program at another institution and plan to attend the University of Kentucky as Visiting Students need not submit transcripts. Students must, however, request a Visiting Student form from the Graduate School 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

Activities which are used to satisfy degree requirements must be completed within eight years preceding the proposed date of graduation. Extensions of time will be considered by the Graduate Council only upon written recommendation by the appropriate Director of Graduate Studies. No activity completed more than 12 calendar years preceding the proposed graduation date will be considered for graduation.

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). Authorization forms to pay dissertation fees are issued in Room 307, Patterson Office Tower.

To be eligible for a degree, students must file an appli-

cation 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

Semesters: Fall and Spring

	Resident	Non-resident
Full-Time Student Graduate School	\$376	\$1,066
Part-Time Student Graduate School	42	119
Summer School Terms:		
Full-Time Student (Eight-Week Session only)	Resident	Non-resident
Graduate	210	595
Part-Time Student and Four-Week Session (per hour fee)	42	119

Four-Week Session:

Four credit hours is the maximum course load and fees will be assessed separately per hour.

Eight-Week Session:

Full-time fees are attained at five hours for the Graduate School.

FEES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Termination

The Dean of the Graduate School may terminate enrollment for the following reasons:

1. Academic probation for three enrolled semesters.
2. Having failed twice the final examination for the master's degree or the qualifying examination.
3. In cases where the student's Advisory Committee recommends termination after the qualifying examination has been passed, the Graduate Faculty in that Program will meet to vote on the recommendation. When the Graduate Faculty of that program concurs and the student dissents, the student will have an opportunity to meet with the Graduate faculty of the Program, after which a second vote will be taken and a final recommendation will be made to the Dean of the Graduate School.

Each Program sets specific requirements and standards of performance, evaluative procedures and criteria, and procedures for terminations. The student should be informed of these criteria at the time of enrollment by the Director of Graduate Studies of the Program."

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 Kentucky. 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 the student's adviser, or major professor, the Director of Graduate Studies, and the Graduate Dean, a maximum of nine semester hours of regular graduate course credits earned prior to admission to a given graduate degree program may be credited toward the minimum requirements of the Master's or Specialist degree in that graduate program provided that the grades earned were A or B. For example, such credits may be earned (1) as a student in another graduate program at the University of Kentucky, from which a degree was awarded, (2) as a post-baccalaureate graduate student at the University of Kentucky, or (3) as a graduate student at another accredited graduate school. In the event a student offers credits in more than one of these categories, the total to be credited toward the degree still may not exceed nine hours. In no case will independent work, research, thesis or dissertation credit completed as a part of degree requirements for one program be considered to satisfy requirements of a subsequent master's program.

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.

Second Master's Degree

Two degrees will not be granted at the same time and si-

multaneous enrollment in two or more programs is not permitted. (See Section on **Transfer of Credit**.)

Final Examination

A final examination (oral and/or written) is given to 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 committee 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 decisions 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 Faculty 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 related graduate areas.

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 pre-

pared 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 must 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 normally accepted languages. However, another modern language pertinent to the student's program may be substituted on the recommendation of the adviser and with the approval of the Director of Graduate Studies and the Graduate Dean. 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 450.
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, Gillis Building. 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 must be proficient in English.

GENERAL REQUIREMENTS FOR ALL DOCTORAL DEGREES

Degree of Doctor of Philosophy

The Ph.D. degree is intended to represent the demonstration of independent and comprehensive scholarship in a specific field. Such scholarship must be manifested by both the student's mastery of subject matter and capacity to do research.

The degree of Doctor of Philosophy is conferred upon a candidate who after completing graduate work devoted to study of a special field of knowledge (1) passes comprehensive examinations in the chosen field and the dissertation subject, (2) presents a satisfactory dissertation, and (3) shows evidence of scholarly attainment.

Students should note that some doctoral programs have degree requirements that may exceed the minimum requirements of The Graduate School.

The Major Professor and Advisory Committee

Each student's program is guided by a Major Professor and Advisory Committee throughout the graduate career. Their purpose is to give continuity of direction and counsel and provide intellectual stimulation from the earliest days of residency through the completion of the doctorate.

The Director of Graduate Studies, or designee, serves as adviser to beginning graduate students. The Director of Graduate Studies, or designee, signs schedule cards and performs other advisory functions until the Advisory Committee is appointed, normally not later than the point at which 18 credit hours of graduate work have been accumulated and in any event at least one year prior to the Qualifying Examinations. The Major Professor then assumes primary advisory functions and chairs the Advisory Committee. The Dissertation Director, when selected, serves as the Major Professor. The Advisory Committee also provides advice to the student and specifically sets requirements (within applicable Program, Graduate School, and University regulations) which the student must meet in pursuit of the doctorate. The Major Professor and Advisory Committee are appointed by the Graduate Dean after

consultation with the appropriate Director of Graduate Studies.

The Advisory Committee has a core of five members. This core consists of the Major Professor as Chairman, two or three other members from the major area, and at least one representative from any minor area(s). At least one representative must be from outside the academic program (department). All members of the core must be members of the Graduate Faculty of the University of Kentucky and three (including the Major Professor) must possess full Graduate Faculty status. Additional faculty members may serve as members of the Advisory Committee. The core of the Advisory Committee must be kept at its full complement throughout the graduate career of the individual student. Thus, in the event of a vacancy on the Committee (occasioned by resignation, faculty leave, or inability to serve), an appropriate replacement must be made prior to the making of any committee decision.

All decisions of the Advisory Committee are by majority vote of its Graduate Faculty members. Advisory Committee decisions must be reported promptly to the appropriate Director of Graduate Studies who will be responsible for transmitting them to the Dean of The Graduate School.

In addition to advising and program planning, the Advisory Committee is also involved with the administration of the Qualifying Examination, the supervision of the preparation of the dissertation, and the administration of the Final Examination on the dissertation (see appropriate section below).

Major and Minor Subjects

Every applicant for the Ph.D. degree must select a major area of study. The major area is one in which the student's efforts are concentrated. Some programs also require one or more minor areas. Minor(s) must be approved by the student's Advisory Committee.

Residence Requirements

The purpose of a residence requirement is to encourage contact with the academic community in which doctoral students may become fully involved with colleagues, libraries, laboratories, on-going programs of research and inquiry, and experience the intellectual ferment which characterizes a university. Such experience is generally as important as formal classwork in the process of intellectual development. While the residence requirements are, by necessity, given in terms of full or part-time enrollment, the intent of the requirement is to ensure that the student becomes fully involved in an essential part of scholarly life.

Requirements for the doctorate may be completed in three years of full-time graduate work or the equivalent in combined full-time and part-time study;* however, more time may be required. In unusual cases approval of a program of study involving less time may be secured from the Graduate Dean. It should be understood that scholarly accomplishment is the ultimate basis on which requirements are met, not semester hours completed or time spent in the program. On the recommendation of the Director of Graduate Studies and with the concurrence of the Graduate Dean, successful completion of a master's degree may

be considered the equivalent of the first of the three years.

Each student pursuing the doctorate must spend at least two consecutive semesters enrolled in a degree program on campus in intensive study. Such enrollment must occur prior to passing the Qualifying Examination. During these two semesters the student must be enrolled as a full-time student, carrying nine or more hours. If the summer term is to be used in lieu of one of these semesters, enrollment for nine hours is required.

Exceptions to this normal pattern may be made with the approval of the Dean of the Graduate School upon the written recommendations of the student's Advisory Committee and the Director of Graduate Studies, which clearly demonstrates that the principle of residence is preserved.

Each candidate for the doctorate must complete two semesters of full-time dissertation study immediately following the Qualifying Examination. Normally this is accomplished by registering for nine hours of 769 (which is called Residence Credit) each semester and completed with a grade of S. With the written recommendation of a candidate's Advisory Committee and with the approval of the appropriate Director of Graduate Studies and the Graduate Dean, specified graduate course work may be taken in lieu of all or part of this residence credit (769) requirement. If a summer term is substituted for one of the semesters, three credits must be taken in the four-week session and a minimum of six credits in the eight-week session. The student need not be physically present on campus while enrolled for credit after the Qualifying Examination. While there is generally no formal class work attached to these credits, and in some cases the student may not be on the campus, full tuition costs are assessed in that students who are preparing their dissertations are utilizing University resources such as libraries, Computing Center, and Major Professors' and Committee members' time and energy.

The semester during which the student takes the Qualifying Examination may be counted for credit for dissertation study only if the date of successful passage is within six weeks (three weeks for the eight-week summer session) of the first day of classes.

Students who have fulfilled these requirements, but who have not yet defended the dissertation, are required to enroll for 769 (0-9 credit hours) each semester until the dissertation is completed and defended. Such registration enables the University to keep accurate records of degree candidates and facilitates rapid and accurate information processing. Some programs have additional residence requirements which must also be met.

In general, the two required semesters of presence on campus and the two semesters of residence credit (769) will not satisfy the study requirements for the doctorate as the latter normally requires at least the equivalent of three years. The difference is to be made up by additional full or part-time work as appropriate. Further, it should be understood that the above represents the **minimum requirements** of The Graduate School. Some programs have additional requirements.

*In those situations where part-time course work toward the doctorate may be used in lieu of full-time enrollment, each nine hours of course credit earned on a part-time basis is considered the equivalent of a full-time semester.

Language Requirements

As stated in the specific program description, an applicant must have a reading knowledge of one or more modern foreign language. The language(s) normally accepted are French, German, or Russian. However, any modern foreign language more appropriate to the student's field of study may be selected on the recommendation of the Advisory Committee and with the approval of the Director of Graduate Studies and the Graduate Dean. Arrangements must be made through the Office of the Graduate Dean for examinations in languages not regularly taught at the University of Kentucky.

If the foreign language requirement has not been satisfied after four semesters of full-time graduate work (i.e., post baccalaureate), the student must register for a graduate level language course as part of the course load. The language requirement must be satisfied before the applicant may be admitted to the Qualifying Examination. (See section on Foreign Language Requirements.)

The Qualifying Examination

A Qualifying Examination consisting of both written and oral components is required of all doctoral students. Its purpose is to verify that students have sufficient understanding of and competence in their fields to become candidates for the degree. In most programs an individual Qualifying Examination is prepared and administered by the Advisory Committee; in some cases that committee also judges the results of the examination. A majority vote of the core of the Advisory Committee is required for successful completion of the Qualifying Examination. Programs which give uniform written Qualifying Examinations to all of their candidates shall have rules (filed with the Graduate Dean) governing the role of the Advisory Committee in the preparation, administration, and evaluation of the Qualifying Examination. The examination is given usually after four semesters of graduate work or the equivalent.

The Qualifying Examination must be scheduled through the Director of Graduate Studies and approved two weeks in advance by The Graduate School. Failure to meet this scheduling requirement may result in students not having proper University status and can cause omissions in records, loss of credits, or delay of graduation. Students should check with the Director of Graduate Studies to make sure that the Qualifying Examination has been appropriately scheduled.

The results of the examination must be reported by the Director of Graduate Studies to The Graduate School within 10 days of its conclusion. If the result is failure, the Committee determines the conditions to be met before another examination may be given. The minimum time between examinations is four months. A second examination must be taken within one year after taking the first examination. A third examination is not permitted.

The Dissertation

Each student must present a dissertation which is the result of original research. The Major Professor is the primary source of guidance in the planning and preparation

of the dissertation. However, other members of the Advisory Committee may be involved in the process as well. All core members of the Advisory Committee must read the dissertation prior to signing the Approval Form. It is the responsibility of the Advisory Committee to make suggestions for revisions before the Final Examination. A majority of the Advisory Committee core members must indicate that the form and substance of the dissertation are adequate to justify the scheduling of the Final Examination. The Final Examination on the dissertation may not be scheduled without the signatures of a majority of the Advisory Committee's members on the Approval Form.

The style and form of 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 the *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 University Billings and Collections Office.

Copyright

Dissertations may be copyrighted by the student (1) signing the Copyright Authorization on the Microfilm Agreement 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 \$35 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 Final Examination includes a defense of the dissertation and may be as comprehensive in the major and minor areas as the Advisory Committee chooses to make it. It is conducted by an expanded Advisory Committee chaired by the Director of Graduate Studies or someone designated by the Director. The Graduate Dean and President of the University are ex officio members of all final examination committees. The examination is a public event and its scheduling is published and announced beforehand. Any member of the University community may attend.

At least four weeks prior to the Final Examination, following notification by the Major Professor that the dissertation has been distributed to members of the Advisory Committee, the Director of Graduate Studies will advise The Graduate School of the intent to examine. At this time the Graduate Dean appoints an Outside Examiner as a core member of the Advisory Committee. The specific time and date of the examination must be designated by The Graduate School at least two weeks prior to the actual examination. All members of the Committee except the Outside Examiner have had an opportunity to suggest revisions prior to signing the Dissertation Approval Form. Thus, most revisions should have been completed at an

earlier time. The Final Examination must take place no later than eight days prior to the last day of class of the semester in which the student expects to graduate.

The Dissertation Approval Form, along with a typewritten copy of the dissertation, must be presented to The Graduate School at the time the Final Examination is established. The draft of the dissertation submitted must be complete in content, including all footnotes, tables, figures, and appendices. A full bibliography or set of references must be included as must a title page and abstract.

In all decisions, the majority opinion of the Graduate Faculty members of the Advisory Committee prevails. If the Advisory Committee is evenly divided, the candidate fails.

In the event of failure, the Advisory Committee recommends to the Graduate Dean conditions under which the candidate may be re-examined, if re-examination is deemed appropriate. When conditions set by the Graduate Dean have been met, the candidate may be re-examined. Should any vacancies on the Committee occur between the two examinations, the Graduate Dean shall appoint replacements. A third examination is not permitted.

After the Final Examination is passed, the final copy of the dissertation is prepared. Final copies are then submitted to The Graduate School along with the signatures of the Major Professor and the Director of Graduate Studies. The dissertation in its final form must be received in the Graduate School Office within 60 days of the Final Examination. If this deadline is not met, the candidate must undergo a second examination.

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.

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.)

Doctor of Education

(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. Inquiries should be directed to the Directors of Graduate Studies, University of Kentucky.

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, and clinical and college teaching.

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 700, 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.

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 field.

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 700, 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.

Doctor of Education

The requirements for the Ed.D. corresponds to those of the Ph.D. with the following Differences:

1. In addition to other credentials, admission requirements include:
 - a. a master's degree, or,
 - b. thirty (30) graduate credit hours in preparation of or applicable to an appropriate master's degree.
2. Some program areas require successful teaching, clinical, or administrative experience for admission.
3. The program requires completion of a major body of course work of at least 42 graduate credits beyond the minimum hours required for admission.
4. Course work for the Ed.D. will be planned by the Advisory Committee to complement and extend previous graduate work. Therefore, the student's total doctoral and pre-doctoral graduate work will reflect competencies in the following areas:
 - a. **Area of Concentration:** A significant concentration of course work designed to develop an in-depth knowledge in a specific area of Education.
 - b. **Support Areas:** Course work to support the Area of Concentration shall include the following two components:
 - (1) Disciplinary support work from outside the Area of Concentration. Some or all of this work will be done outside the College of Education.
 - (2) Course work relevant to the development of competencies in the foundational studies in Education. Such course work to be taken in departments of the College of Education other than the Area of Concentration.
 - c. **Research Methodology:** At least nine (9) credits of recent (within the "time limit for degrees" policy of the Graduate School) course work selected to develop competencies in conceptualizing research, designing experiment, selecting appropriate methodology, processing and analyzing data, interpreting results, and arriving at conclusions.
5. Although some students' programs may require competency in a foreign language as a research tool, there is no general language requirement.
6. The core membership of the Advisory Committee for each Ed.D. student consists of members distributed as follows:
 - a. The major professor and two other members from the Area of Concentration.
 - b. Two members from areas other than the Area of Concentration; at least one of these from outside Education.
 - c. Three members must be full members of the Graduate Faculty.
7. On joint programs with the regional universities, three Advisory Committee members must be from the University of Kentucky and must be full members of 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) 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 project (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 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 Administration and Supervision, 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.

FELLOWSHIPS

Nonservice Fellowships

Academic Year Fellowships: The Graduate School awards a number of nonservice fellowships to outstanding graduate students. Application forms are contained in the "Application packet" which is sent to all persons requesting information on admission. These forms may also be obtained from the Fellowship Office, 329 Patterson Office Tower.

While later applications are accepted, it is strongly suggested that the completed application and all supporting documents be submitted by February 1.

Fellowship applications must be supported by the same documents as are required for admissions applications. Applicants should check with the Director of Graduate Studies in the relevant department or program to determine whether additional materials, such as letters of recommendation, are required at that level. Late applicants and minority applicants should submit letters of recommendation directly to the Associate Dean for Program Support, The Graduate School.

The standard full stipend for an Academic Year Fellowship is \$5200 for the academic year. However, fractional awards are sometimes made. Fellowship awards are often made in combination with assistantships resulting in financial support packages of various amounts.

Recipients of Academic Year Fellowships must be registered as full-time students.

Many of the Academic Year awards are **Haggin Fellowships**. These fellowships are endowed by Margaret Voorhis Haggin in the memory of her father, George Voorhis.

Other Academic Year awards are funded directly by The Graduate School.

University of Kentucky Research Foundation Fellowships: The University of Kentucky Research Foundation supports fellowships of about \$6,000 for one academic year to assist graduate programs in recruiting outstanding students. The general conditions and requirements attaching to these awards are the same as for Academic Year Fellowships. Departments and programs nominate incoming students for UKRF awards. No special application is required.

The Dr. Paul I. Murrill Memorial Scholarship in Chemistry: 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 an attractive stipend 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 conditions and requirements attaching to these awards are generally the same as for Academic Year Fellowships. Academic Year Fellowship applicants are automatically considered for Murrill awards. There is no special application form. However, interested applicants should contact the Director of Graduate Studies in the Department of Chemistry well before the February 1 deadline.

The Robert N. Jeffrey Fellowship in Tobacco Research: These fellowships are supported by the Jeffrey Me-

morial 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 an attractive stipend for one 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 conditions and requirements attaching to these awards are generally the same as for Academic Year Fellowships. Academic Year Fellowship applicants will be considered for Jeffrey awards. There is no special application form. However, interested applicants should contact the Chairman of the Jeffrey Fellowship Committee, c/o Associate Dean for Program Support, The Graduate School, well before the February 1 deadline.

Patterson Fellowships in Diplomacy and International Commerce: Patterson Fellowships are available from an endowment established by Dr. James K. Patterson, the first president of the University. These fellowships are available to highly qualified applicants enrolled in the Patterson School interdisciplinary M.A. program in Diplomacy and International Commerce. The awards are offered at various stipend levels ranging up to the full stipend level of the Graduate School Academic Year Fellowships. In addition, the Patterson School from time to time has supplementary fellowship resources from donors and other benefactors. The conditions and requirements attaching to these awards are generally the same as for Academic Year Fellowships. There is no special application form; interested persons must submit the Academic Year Fellowship application forms in the usual manner by February 1, and must contact the Director of Admissions, Patterson School of Diplomacy, in advance of that deadline.

The George W. Pirtle Fellowship in Geology: The George W. Pirtle Fellowship is a grant of \$1000 per year 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 recommendations of the faculty of the Department of Geology and is based on need and promise of future achievement in the geological field.

Research

The University of Kentucky is the land grant institution for the State and also the major graduate and research institution in the State. It is committed to conducting programs in both basic and applied research. Research programs not only represent the lifeblood of graduate research and education but also expand the boundaries of knowledge in areas related to our society. Research programs, along with the attendant education programs, are essential for providing intellectual and cultural leadership and the many highly qualified people required to cope with the problems of a highly complex society.

University Research is supported by federal, state, local and private organizations in a manner which is consistent with the mission of the University. The University faculty and research staff are involved in research and scholarly activity in areas varying from the creative arts, humanities, basic science, mechanical sciences to government, health,

social services and education. Research programs range from the philosophical and ethical problems raised by advances in biological sciences, physical sciences and medicine to the delivery of education materials throughout the Appalachian Region by satellite.

The University is involved heavily in applied and mission orientated research in such fields as coal, oil, shale, tobacco and health, transportation, education, crops, soils and nutrition. Large research programs in coal and energy are conducted by University faculty and The Institute of Mining and Minerals Research. Similarly, programs in tobacco and health are conducted by University faculty, The College of Agriculture and The Tobacco and Health Research Institute. There is a center for multidisciplinary research in aging and a center for conducting cancer research.

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.

Research and Teaching Assistantships

Most departments employ part-time teaching and research assistants. 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.

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 are 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.

The Multidisciplinary Center of Gerontology

The Multidisciplinary Center of Gerontology is a center for research, instruction, training and service to local and state agencies. It administers interdisciplinary research programs in aging, coordinates the offering of gerontology courses, and assists in the training of graduate students who are interested in the various programs in aging.

Students interested in graduate study with an emphasis in gerontology may contact the Director of the Center.

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 in-

terdisciplinary 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.

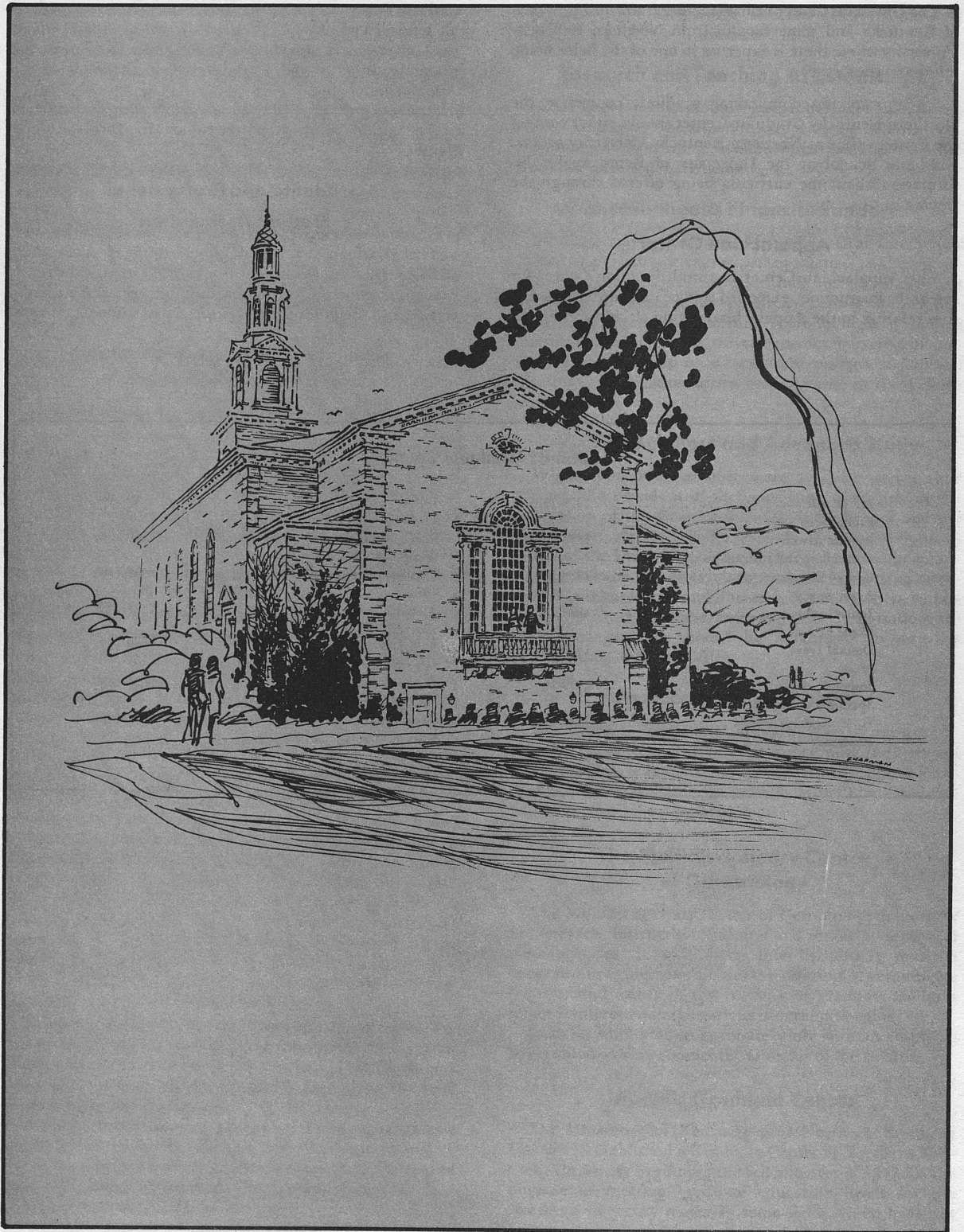
Students interested in graduate study with an emphasis in the Appalachian region may contact the Director of the Center.

Graduate and Professional Student 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.

1980-81 Graduate Council

M. M. Ali	1979-1982	Donald Leigh	1980-1982
Economics		Engineering Mechanics	
Ronald Atwood	1978-1981	M. C. McCord	1980-1981
Curriculum and Instruction		Computer Science	
George Cheniae	1980-1983	Gerard Silberstein	1980-1983
Agronomy		History	
John Crosby	1979-1982	Alfred Winer	1978-1981
Home Economics		Biochemistry	
Donald Ivey	1979-1982	Judith Worell	1980-1981
Music		Educational Psychology and Counseling	
Joseph R. Jones	1979-1981	Deborah Gona	1980-1981
Spanish and Italian		Student Member, Political Science	
H. B. Kostenbauder	1980-1981	Steve Kenkel	1980-1981
Pharmacy		Student Member, Physics	



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			*
	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	*
	Master of Arts	X		One	24
	Master of Arts		X		33*
	Master of Arts	X			45
Art (Studio)	Master of Arts	X			36
	Master of Arts	X		Two	24
	Master of Arts	X			24
Biochemistry	Doctor of Philosophy	X		One	*
Biology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
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
	Master of Science in Civil Engineering		X		30*
	Master of Science in Civil Engineering		X		36
	Master of 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	One	30
Communications	Doctor of Philosophy	X		One	*
	Master of Arts	X			30
	Master of Arts		X		30*
Computer Science	Doctor of Philosophy	X		Two	*
	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		X		30
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Curriculum and Instruction	Doctor of Education	X			*
	Specialist in Education		X		30*
	Master of Arts 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*
	Master of Arts in Education	X			30
	Master of Arts in Education		X		36
	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
Economics	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Arts		X	One	30
	Master of Science		X	One	30
Educational Psychology and Counseling	Doctor of Philosophy	X		One	*
	Doctor of Education	X			*
	Specialist in Education		X		30*
	Master of Arts in Education	X			30*
	Master of Arts in Education		X		36*
	Master of Science in Education	X			30*
	Master of Science in Education		X		36*
Electrical Engineering	Doctor of Philosophy	X		One	*
	Master of Science in Electrical Engineering	X			24
	Master of Science in Electrical Engineering		X		30
Engineering Mechanics	Doctor of Philosophy	X		One	*
	Master of Science in Engineering Mechanics	X			24
	Master of Science in Engineering Mechanics		X		30
English	Doctor of Philosophy	X		Two	*
	Master of Arts	X		One	24
	Master of Arts		X	One	30
Entomology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science in Agriculture	X			24
Forestry	Master of Science in Forestry	X			24
	Master of Science in Agriculture	X			24
	Doctor of Philosophy	X		Two	*
French Language and Literature	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Arts	X		One	24
Geography	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Arts	X		One	24
Geology	Master of Arts		X	One	30
	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
Germanic Languages and Literatures	Doctor of Philosophy	X		One	*
	Master of Arts	X		One	24
	Master of Arts		X	One	30
Health, Physical Education and Recreation	Master of Science	X		One	24
	Master of Science		X		30
Health Radiation Sciences	Master of Science in Radiological Medical Physics		X		31
	Master of Science in Radiological Health		X		32
	Doctor of Philosophy**	X		One	*
Higher Education	Doctor of Education	X			*
	Specialist in Education		X		30*

PROGRAM	DEGREE	Thesis Option	Non-thesis Option	Language Required	Credit Hours
	Master of Science in Education		X		30*
	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 Family Studies	X			*
	Master of Science in Family Studies		X		*
	Master of Nutritional Sciences	X			*
	Master of Nutritional Sciences		X		*
	Master of Interior Design	X			*
	Master of Interior Design		X		*
	Master of Arts in Textiles and Clothing	X			*
	Master of Arts in Textiles and Clothing		X		*
Horticulture and Landscape Architecture	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		36
Library Science	Master of Arts	X		One	30
	Master of Arts		X	One	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
	Master of Arts		X	One	30
	Master of Art in Teaching (Mathematics)				30*
Mechanical Engineering	Doctor of Philosophy	X		One	*
	Master of Science in Mechanical Engineering	X			24
	Master of Science in Mechanical Engineering		X		30*
	Master of Science in Nuclear Engineering	X			24
	Master of Science in Nuclear Engineering		X		30*
Metallurgical Engineering and Materials Science	Doctor of Philosophy	X		One	*
	Master of Science in Metallurgical Engineering	X			24
	Master of Science in Metallurgical Engineering		X		30
Microbiology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
Mining Engineering	Master of Science in Mining Engineering	X			24
	Master of Science in Mining Engineering		X		30
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
Operations Research	Master of Science in Operations Research		X		36
Pharmaceutical Sciences	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
	Master of Science		X	One	30
Pharmacology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science		X		30
Philosophy	Master of Arts	X		One	24
	Master of Arts		X	One	30
Physics and Astronomy	Doctor of Philosophy	X		Two	*
	Master of Science	X		One	24
	Master of Science		X	One	30
Physiology and Biophysics	Doctor of Philosophy	X		One	*
	Master of Science	X		One	24
	Master of Science		X	One	30
Plant Pathology	Doctor of Philosophy	X		One	*
	Master of Science	X			24
	Master of Science in Agriculture	X			24
	Master of Science in Agriculture		X		30

PROGRAM	DEGREE	Thesis Option	Non-thesis Option	Language Required	Credit Hours Required	
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	
	Master of Science	X		One	*	
Psychology	Doctor of Philosophy	X			24	
	Master of Arts	X			24	
	Master of Science	X			24	
Public Administration	Master of Public Administration		X		45	
Rehabilitation Counseling	Master of Rehabilitation Counseling		X		*	
Social and Philosophical Studies in Education	Doctor of Philosophy**	X		One	*	
	Doctor of Education	X			*	
	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	
	Social Professions	Doctor of Philosophy	X		One	*
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		36	
	Doctor of Philosophy	X		Two	*	
Spanish and Italian Languages and Literatures	Master of Arts	X		One	24	
	Master of Arts		X	One	30	
Special Education	Doctor of Education	X			*	
	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*	
Statistics	Doctor of Philosophy	X		One	*	
	Master of Science	X			29	
	Master of Science		X		35	
Theatre Arts	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			42*	
	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	
	Options: Business Education, Distributive Education	Master of Arts in Education		X		30
Options: Vocational Education, Agricultural Education, Home Economics Education, Industrial Education	Master of Science in Education	X			24	
	Master of Science in Education		X		30	

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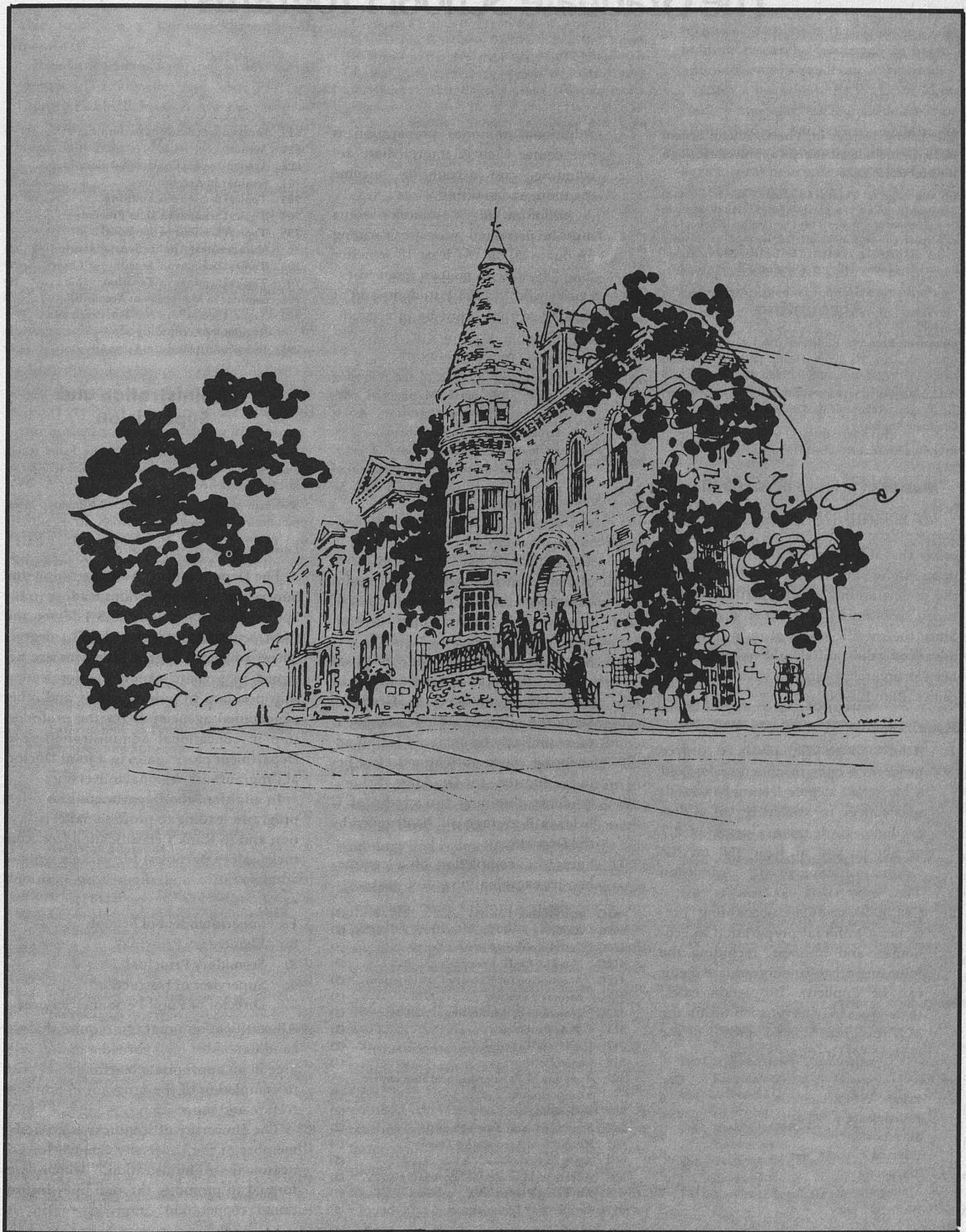
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The Graduate School Staff Directory

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Phyllis Graves (606) 257-1663
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Sue Wilson (606) 257-1759
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Lynn Allen (606) 257-2761
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Betty Floyd (606) 258-4905
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Admissions and Records
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The Graduate School Programs

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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, Chair, William W. Ecton (Dean), James A. Knoblett (Associate Dean), Donald L. Madden, Levis D. McCullers, Albert W. Patrick, Associate Professors Manuel L. Tiggos, Reimond P. VanDaniker. (Director of Graduate Studies)

Emeritus Professor: Robert Haun.

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

- 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.
- 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.

- 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.
- The course requirements are:
 - One course in each of the following fields: Advanced Managerial Accounting, Income Taxation, Attest Function, Accounting Theory.
 - At least six semester hours of graduate credit outside the Department of Accounting, three of which must be production related.
 - A Computer Science or Data Processing.
- The candidate must submit evidence of competence in statistics (successful completion of six semester hours of course work at the upper division level).
- 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.
- Successful completion of a comprehensive examination.

401G Accounting Theory	(3)
403G Auditing	(3)
408G Cost Accounting	(3)
410G Not-For-Profit Accounting	(3)
416G Accounting for Business Combinations	(3)
417G Income Taxation	(3)
422G Functions of Accounting	(3)
515 C.P.A. Problems	(3)
517 Corporate Taxation	(2)
518 Controllership	(3)
527 Taxation of Partnership and Subchapter S Corporations	(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 Applications in Accounting	(1)
706 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 (Chair and Director of Graduate Studies), James B. Kinchloe, James Ogletree.

Associate Members: Professor Fred Edmonds, Assistant Professor Kenneth Brooks

Emeritus Professor: W. Paul Street

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:

- Superintendent of Schools
- Elementary Principal
- Secondary Principal
- Supervisor of Instruction
- 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
-
- | | |
|------------------------------------------------------------------------------|--------|
| 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) |
| 769 Residence Credit for the Doctor's Degree | (0-12) |
| 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 R. Ansel (Director of Graduate Studies), Garnett L. Bradford, Russell H. Brannon, David L. Debertin, Fred E. Justus, Alan Randall, John C. Redmon, Robert W. Rudd (Chair), D. Milton Shuffett, Eldon D. Smith, Associate Professors Robert D. Beck, Barry W. Bobst, Harry H. Hall, Loys L. Mather, Angelos Pagoulatos and Lynn Robbins.

Associate Members: Professors Joe T. Davis, Craig L. Infanger (Extension), Harold G. Love (Extension), Charles Moore (Extension), Assistant Professors S. J. Chang, Donald Graves, Michael R. Reed.

Emeritus Professors: George Byers and Dana Card.

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, on 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 employed 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.

MARKETING AND AGRI-BUSINESS MANAGEMENT

- | | |
|----------------------------------------------------------------|-----|
| 501 Agricultural Market Organization and Performance | (3) |
| 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

- | | |
|-------------------------------------------|-----|
| 502 Advanced Farm Management | (3) |
| 516 Rural Real Estate Appraisal | (3) |

PRODUCTION ECONOMICS

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

AGRICULTURAL PRICES AND FINANCE

- | | |
|--------------------------------------------------|-----|
| 441G 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

- | | |
|-----------------------------------------------------------------------|--------|
| 580 Special Problems in Agricultural Economics | (1-3) |
| 590 Introduction to Quantitative Economics I | (3) |
| 624 Advanced Quantitative Methods in Agricultural Economics | (3) |
| 660 Research Methods in Agricultural Economics | (3) |
| 661 Programming Models in Agricultural Economics | (3) |
| 768 Residence Credit for the Master's Degree | (1-12) |

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

445G	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, Blaine Parker, Joe Ross (Chair and Director of Graduate Studies), Edward Smith, John Walker, Gerald White. Associate Professors Wiley Henson, Otto Loewer, Linus Walton, Larry Wells.

Associate Members: Associate Extension Professors George Duncan and Robert Fehr, Assistant Professors I. D. Moore.

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 department normally requires a grade point average of 2.8/4.0 for admission to its graduate program.

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 thesis 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.

406G	Physics of Plant and Animal Environment	(3)
417G	Introduction to Design of Agricultural Machinery	(3)
427G	Design of Agricultural Structures	(3)
431G	Watershed Hydrology	(3)
437G	Soil and Water Conservation Engineering	(3)
447G	Processing and Food Engineering	(3)
503	Animal Waste Management	(3)
505	Engineering Analysis	(3)
519	Plant, Soil and Machinery Relationships	(3)
525	Environmental Design for Biological Systems	(3)
536	Fluvial Hydraulics	(3)
537	Irrigation and Drainage Engineering	(3)
548	Advanced Agricultural Processing	(3)
550	Analysis and Simulation of Agricultural, Biological and Industrial Systems	(3)
568	Solar Energy Systems	(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 Resources	(3)
645	Electromagnetic Radiation in Agricultural Engineering	(3)
648	Energy and Mass Transfer in Agricultural Processing	(3)
658	Methodology and Instrumentation for Research	(3)
660	Similitude in Engineering	(3)
750	Special Problems in Agricultural Engineering	(1-3)
768	Residence Credit for Master's Degree	(1-12)
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.

Allied Health

500	Organization and Supervision in Health Care Delivery	(3)
595	Directed Studies	(1-3)
660	Advanced Clinical Practicum in Allied Health	(1-6)

670	Advanced Seminar in Allied Health	(1-3)
690	Research Problems in Allied Health	(3)
MD 500	Special Topics Course	(1-3)
MT 501	Seminar in Advanced Hematology	(2)

Anatomy

Graduate Faculty: Professors Peter P. Bosomworth, William B. Cotter, Ira Fowler, Roger Lambson, Harold F. Parks, Harol H. Traurig (Director of Graduate Studies) and Miroslava Nikitovitch-Winer. (Chair). Associate Professors William K. Elwood, Daniel H. Matulionis Raymond E. Papka, and Stephen S. Smith. Assistant Professor Richard F. Walker.

Associate Members: Associate Professor Norman Goodman unassigned member of the Graduate Faculty from the College of Medicine.

Emeritus Professor: Lois Gillilan.

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 Director of Graduate Studies in 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	(1-12)
769	Residence Credit for Doctor's Degree	(0-12)
MD 500	Special Topics Course	(1-3)

Animal Sciences

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

Associate Members: Professor Nelson Gay. Assistant Professor Lee A. Edgerton, Clair Hicks, William Muir, Joseph O'Leary, Tim Stahly.

Emeritus Professors: Ray Dutt, T. R. Freeman, W. P. Garrigus, Donald MacLaury, Dwight Seath and Dewey Steele.

The degrees of Master of Science, Master of Science in Agriculture (Plan A and Plan 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.

404G	Sheep Science	(3)
406G	Beef Cattle Science	(3)
408G	Swine Science	(3)
410G	Horse Sciences	(3)
412G	Horse Husbandry Practices	(3)
420G	Dairy Cattle Science	(3)
430G	Sensory Evaluation of Foods	(3)
442G	Poultry Science	(3)
462G	Artificial Insemination and Fertility of Farm Animals	(2)
530	Food Microbiology	(5)
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	(1-12)
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, Art Gallaher, Jr., Donald Hochstrasser, Marion Pearsall, Associate Professors Susan Abbott (Director of Graduate Studies), Albert Bacdayan (Chair), Robert Biggerstaff, Michael Collins, Billie R. DeWalt, Lathel Duffield, John Van Willigen, Richard Warren, Helen Wiese.

Associate Members: Assistant Professors: Kathleen DeWalt, Kenneth Hirth, W. Precourt, Eugenie Scott.

Emeritus Professors: Margaret Lantis and Philip Drucker.

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 Develop-

mental Change, Education and Medicine. The Department offers two M.A. options: a general anthropology degree (Plan A) certifying a broad background in anthropology, 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 equivalent topical courses specified by the Department. Students who (1) excel in this program and (2) demonstrate satisfactory research competence, may petition to bypass the master's thesis. A reading knowledge of one foreign language or any one of the following research skills is required for the M.A. degree in anthropology: 1) facility in a programming language (e.g., PLI, Fortran), 2) competence in the use of statistics and/or mathematics in anthropology, and 3) competence in linguistics sufficient to allow fieldwork using an unwritten language.

The Ph.D. program in anthropology requires 1) a reading knowledge of two foreign languages, or 2) a high degree of proficiency in reading, writing and speaking one foreign language. The second foreign language in option 1 may be replaced with any one of the following: 1) facility in a programming language (e.g., PLI, Fortran), 2) competence in the use of statistics and/or mathematics in anthropology, and 3) competence in linguistics sufficient to allow fieldwork using an unwritten 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.

402G	Human Identification	(2)
421G	North American Indians	(3)
428G	Contemporary Cultures and Societies in Southeast Asia	(3)
430G	Comparative Religious Systems	(3)
438G	Ethnology of the Near East and North Africa	(3)
442G	New World Prehistory	(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)
528	Dimensions of Aging	(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)
539	Aging in Cross-Cultural Perspective	(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	Research Design	(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	(1-12)
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, John Tuska, Associate Professors Gerald Ferstman, Elizabeth Finkenstaedt (Director of Graduate Studies, Art History), Donald Hoffman, Leonard L. Hunter (Director of Graduate Studies-Art Education), Arthur Jones, Deborah Frederick, Lowell Jones, Arturo Sandoval, Robert Tharsing (Director of Graduate Studies, Studio), Derrick Woodham.

Associate Members: Assistant Professors Georgia Collins, Christine Havice and Jane Peters.

Emeritus Professor: Clifford Amyx.

The Department of Art offers graduate course work in three areas: Art Studio, Art History and Art Education. Both the Art History Area and the Art Education Area confer the Master of Arts degree with a major in the respective area. Studio degree recipients are awarded the M.F.A.

Master of Arts

Major in Art History: 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 12 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 560). 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.

Major in Art Education: Students admitted to the graduate program in art education are expected to have completed course work equivalent to an undergraduate major in Art Education (in no case less than 18 hours in Art Education and Education, 12 hours in Art History, and 18 hours in Art Studio). Prospective students who do not meet these requirements should seek the counsel of the Program Faculty Committee to make up deficits prior to acceptance into the program. (In addition, candidates must submit for review by the Program Faculty Committee, a portfolio of recent studio work (slides) and/or professional writing and other evidence of professional attainment, along with a 300-500 word statement of interest and/or objectives.)

Work toward the Master's degree is pursued under Plan A (see Requirements for the Degrees of Master of Arts and Master of Sciences, Plan A). Successful candidates for the Master of Arts with a major in art education are to satisfactorily complete:

- (1) thesis preparation demonstrating substantial research or theoretical inquiry in Art Education;
- (2) a finished thesis and an oral/written examination;
- (3) 30 credit hours of graduate course work to be divided as follows: (1) nine to 12 graduate credit hours in art education (excluding A-E 575, 577, 579, or other Art Education courses required for initial certification); (2) nine to 12 graduate credit hours in Art History or Art Studio; (3) the remaining nine graduate credit hours may be taken in related course work in the College of Fine Arts, the College of Education or else-

where in the University as well as in the Department of Art.

Master of Fine Arts

Application for admission to graduate work leading to the degree, Master of Fine Arts, including application for graduate assistantships, must be accompanied by a portfolio of creative work or photographs, or transparencies of such work. This work must be submitted to the Art Department by March 15th. Applicants wishing to be considered for fellowships should apply to The Graduate School and submit portfolios to the Art Department by February 1. 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. 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 ..	(1-12)

ART EDUCATION

515	Introduction to Art Therapy ..	(3)
525	The Elderly and the Arts ..	(3)
538	Advanced Arts and Crafts in the Elementary Schools ..	(3)
545	Topical Studies in Art Education (Subtitle Required) ..	(3)
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)
645	Topical Research in Art Education (Subtitle Required) ..	(3)
670	School and Community Art ..	(3)

ART-HISTORY

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)
560	Art History Seminar ..	(3)
570	Art History and the Artist ..	(3)
580	Historical Techniques of Drawing, Painting, and Printmaking ..	(3)
590	Topical Studies in Art History ..	(3)
592	Aesthetics ..	(3)
594	Art Theory and Criticism ..	(3)
598	Coordinate Study ..	(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)
780	Independent Work: Art History ..	(3)

ART-STUDIO

510	Painting III ..	(3)
511	Painting IV ..	(3)
520	Printmaking III ..	(3)
521	Printmaking IV ..	(3)
530	Advanced Drawing ..	(3)
550	Fiber III ..	(3)
551	Fiber IV ..	(3)
560	Sculpture III ..	(3)
561	Sculpture IV ..	(3)
570	Ceramics III ..	(3)
571	Ceramics IV ..	(3)
595	Independent Work: Art Studio ..	(3)
596	Workshop ..	(1-6)
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 (Director of Graduate Studies), Robert Straus (Chair), Associate Professors Russell Jones, Thomas Garrity, Philip Moody, H. Jean Wiese.

Associate Members: Assistant Professors Kathleen DeWalt, John F. Wilson.

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 pre and postdoctoral traineeship stipends. A limited number of assistantships are also available to qualified students.

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)
779	Behavioral Factors in Death and Dying ..	(3)
790	Research in Medical Behavioral Science ..	(1-6)

Biochemistry

Graduate Faculty: Professors Charles Ambrose, Alfred Hu, Robert Lester (Chair), George Schwert. Associate Professors S. K. Chan (Director of Graduate Studies), Mary Sue Coleman, Robert Dickson, Roger Laine, Robert Rhoads, Alfred Winer.

Associate Members: Associate Professor R. E. Galardy. Assistant Professors Mary Barkley, Martin Deibel, and Salvatore Turco.

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.

401G	Fundamentals of Biochemistry	(3)
501	General Biochemistry	(3)
502	General Biochemistry	(3)
503	Plant Biochemistry	(3)
504	Physical 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)
613	Biochemistry of Carbohydrates	(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 may 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 (Director), Branley Branson (Adjunct), E. C. Crawford, W. H. Davis, John Harley (Adjunct), G. Rosenthal, P. S. Sabharwal, J. E. Siskin. Associate Professors J. M. Baskin, J. C. Calkins, J. D. Clark, L. Demski, D. O. Harris, J. J. Just, R. A. Kuehne (Director of Graduate Studies), W. Meijer, William Martin (Adjunct), N. J. Pisacano, D. J. Prior, G. L. Uglem.

Associate Members: Assistant Professors, P. Bonner, W. S. Cohen, P. H. Crowley, B. A. Hanson, M. Iwaya, J. L. Morgan, J. M. Rawls, A. L. Williams.

Emeritus Professors: John Carpenter, James Edney, Herbert Riley.

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.

404G	Principles of Genetics	(3)
411G	Models in Mathematical Biology	(3)
451G	Introductory Ecology	(4)
452G	Laboratory in Ecology	(1)
465G	Economic Botany	(3)
476G	General Microbiology	(4)
502	Principles of Physiology Lecture	(4)
503	Experimental Methods	(2)
508	Evolution	(3)
515	General Cell Biology	(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)
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)
611	Biopathology	(3)
615	Molecular Biology	(3)
617	Advanced Microtechnique	(3)
619	Cytogenetics	(4)
621	Topics in Modern Botany	(1-3)
625	Seminar in Animal Navigation	(2)
630	Experimental Techniques in Plant Physiology	(3)
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)
685	Advanced Immunology	(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	(1-12)
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	(1-12)
MB 769	Residence Credit for the Doctor's Degree	(0-12)
BOT 768	Residence Credit for Master's Degree	(1-12)
BOT 769	Residence Credit for Doctor's Degree	(0-12)
ZOO 768	Residence Credit for Master's Degree	(1-12)
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 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: James Donnelly, James Gibson, Joseph L. Massie, Jon M. Shephard (Chair), Marc J. Wallace (Director of Graduate Studies), Associate Professors K. R. Balachandran, Phillip K. Berger, John J. Bernardo, Andrew Grimes, Joseph Gultinan, Keith Johnson, Wesley Jones, Tony McAdams, Martin Soloman.

Associate Members: Associate Professor Donald Shannon, Assistant Professors Michael Carpenter, I. K. Chew, Charles Fay, James Lang, Brindon Milward, P. J. O'Connor, Gary L. Sullivan.

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 1050; or total of junior senior grade-point average times 200 plus GMAT score in excess of 1100.
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)
 Twenty-one of the 30 hours of prerequisite 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, Personnel and Industrial Relations, 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 or failing to bring the grade-point average back up to a B average in one semester 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 people 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, and related behavioral, quantitative and economic 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 ma-

ior 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.

445G	Financial Management	(3)
456G	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)
619	Problems Seminar in Operations Research	(3)
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	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
771	Seminar in Business Administration	(3)
772	Organizational Development	(3)
773	Seminar in Management Theory and Policy	(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 40536.

Chemical Engineering

Graduate Faculty: Professors Robert Grieves, Charles Hamrin, Richard Kermode, Thomas Schrodt (Director of Graduate Studies), Associate Professors Dibaker Bhattacharyya, William Conger, Edward Moorhead, Leonard Peters (Chair).

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

The Department of Chemical Engineering provides programs leading to the M.S. in Chemical Engineering and Ph.D. degrees. For admission to either program, a G.P.A. of 2.8/4.0 on all undergraduate work is required. 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 re-

quirement 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 Director of Graduate Studies.

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	(1-12)
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 theory, 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 Audrey Companion (Director of Graduate Studies), Paul Corio, William Ehmman, Robert Guthrie, Robert Kiser, William Markesbery, Kurt Niedenzu, John Patterson, Donald Sands, Paul Sears, Walter Smith, Jr., William Wagner (Chair), Associate Professors: Rodney Black, Carolyn Brock, Allan Butterfield, James O'Reilly, Merle Patengill, William Plucknett, Stanford Smith, Joseph Wilson, Steven Yates.

Associate Members: Assistant Professors Phillip E. Fanwick, Floyd J. Holler, James Kincaid, John Selegue, Laren Tolbert.

Emeritus Professors: E. V. Brown, E. M. Hammaker and J. R. Meadow.

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.

410G	Principles of Inorganic Chemistry	(3)
440G	Physical Chemistry	(3)
441G	Physical Chemistry Laboratory	(2)
442G	Physical Chemistry	(3)
443G	Physical Chemistry Laboratory	(3)
444G	Physical Chemistry	(3)
490G	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	(2)
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	(1-3)
602	Short Topics in Chemistry	(1-3)
610	Chemistry of the Transition Metals	(3)
612	Inorganic Chemistry of the Non-Metals	(3)
616	Nuclear Chemistry	(3)
620	Electrochemical Methods of Analysis	(3)
625	Optical Methods of Analysis	(3)
626	Advanced Analytical Chemistry	(3)
633	Advanced Organic Chemistry	(3)
635	Advanced Organic Chemistry	(3)
645	Chemical Thermodynamics	(3)
646	Chemical Kinetics	(3)
710	Topics in Inorganic Chemistry	(2-4)
714	Non-Aqueous Solutions	(2)
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)
755	Topics in Chemical Physics (Subtitle Required)	(3)
768	Residence Credit for the Master's Degree	(1-12)
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	(1-12)

Civil Engineering

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

Associate Members: Assistant Professors George Blandford, D. Roy.

Emeritus Professor: Samuel A. Morey

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
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, Mining 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, (a GPA of 2.8/4.0 on all undergraduate work is normally required) 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 Accrediting Board for Engineering and Technology, ABET (formerly the Engineers' Council for Professional Development, ECPD).

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. It is also required that all applicants for admission must have a combined score on the verbal and quantitative por-

tions of the Graduate Record Examination in excess of 1000.

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.

425G	Soil Mechanics	(3)
485G	Design of Timber Structures, Formwork and Falsework	(3)
487G	Steel Structures	(3)
489G	Design of Structures	(3)
492G	Reinforced Concrete	(3)
515	Advanced Surveying	(3)
519	Boundary Location Principles	(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)
653	Stormwater Modeling	(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	(1-12)
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)

Classical Languages and Literatures

Graduate Faculty: Professors Hubert Martin, Jr. (Chair), Lawrence Thompson. Associate Professors Jane Phillips and Louis Swift (Director of Graduate Studies).

Associate Member: Assistant Professor 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 De-

partment. 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 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

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

CLASSICS IN GENERAL

480G	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)
768	Residence Credit for the Master's Degree	(1-12)
790	Research in the Teaching of Classical Languages	(3)

Clinical Nutrition

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

Associate Member: Professor James Anderson, Associate Professor Willena Beagle.

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
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	Clinical Nutrition	(4)	
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 in-

formation are invited to consult the Department Chairman.

501 Perspectives in Religion and Health (3)

Communication

Graduate Faculty: Professors Robert Bostrom, Lewis Donohew, Ronald Farrar (Director, School of Journalism), Robert Murphy (Director of Graduate Studies), Joseph Ripley, Ramona Rush, Bruce Westley, Associate Professors John Baseheart, Phillip Palmgreen (Chair), Leonard Tipton, Norman Van Tubergen.

Associate Members: Assistant Professors James L. Applegate, Thomas Housel, Michael Kirkhorn, J. D. Rayburn, Howard Sypher.

Graduate faculty members in the College of Communications offer programs leading to the Master of Arts and the Doctor of Philosophy degrees. Emphasis is on the study of communication behavior and policy, including the 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 undergraduate work without graduate credit.

Master of Arts

All students will be required to take 12 core hours consisting of Proseminar in Communication (COM 601), Communication Theory (COM 651), and Communication Research Methods (COM 665), plus Statistics 570 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. Of these, 15 may, with the ap-

proval of the adviser, be taken outside the College of Communications.

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

Doctor of Philosophy

The Ph.D. program educates behavioral scientists for university positions and positions in government, the media and private organizations as policy makers, consultants and researchers. Early in their programs students are expected to learn the basic concepts and research methods used in the four core areas of communication: intrapersonal, interpersonal, social systems and perspectives, including legal and historical aspects.

Ph.D. candidates will take advanced courses in each of two of these areas and at least 12 hours of work in a cognate area outside the College of Communications. In addition, students will take a series of courses in quantitative and non-quantitative research. All Ph.D. students are required to demonstrate competence in a foreign language, usually French, German or Russian.

Each student works with a major professor and an advisory committee to plan the course work and complete the dissertation. The advisory committee determines the time at which the student may take the qualifying examination. When the student passes this examination he or she is formally admitted to candidacy. The major professor and the advisory committee supervise the preparation of the dissertation and eventually certify it for the final oral examination.

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	(3)
731	Seminar in Interpersonal Communication	(3)
741	Seminar in Multi-Actional Communication	(3)
768	Residence Credit for the Master's Degree	(1-12)
781	Directed Study in Communication	(1-6)

JOURNALISM

501	News Reporting	(3)
503	Copyreading and Editing	(3)
504	Telesystems	(3)
507	Feature Writing	(3)
509	Magazine Article Writing	(3)
511	Editorial Writing	(2)
513	Supervision of High School Publications	(1-3)
521	Telecommunications Regulations	(3)
527	The Public Affairs Program	(2)
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)
543	Advertising Regulation	(3)
561	Newspaper and Magazine Advertising	(3)
563	Advertising Procedures	(3)
567	Broadcast Advertising	(3)
579	Proseminar in Radio and Television	(2)
598	Telecommunications Topical Seminar	(2)
599	Advanced Writing for the Mass Media	(3)

SPEECH

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

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

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

500	Public Health Sanitation	(3)
501	Public Health	(3)
511	Independent Study in Community Health	(1-3)
521	Community Health	(3)
522	School and Community Health	(2)
600	Epidemiology	(3)
612	Public Health Administration	(3)

Computer Science

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

Associate Members: Associate Professor Anthony Q. Baxter, Assistant Professor John J. Keohane.

The Department of Computer Science offers programs of study leading to the degrees of Master of Science (Plan A or Plan B) and Doctor of Philosophy. The prospective candidate for the Master's degree should note that in addition to the general requirements stated in the first pages of this Bulletin, admission to the Master's program is quite competitive. Knowledge of one foreign language in which there is a substantial computer literature is a requirement for the Master's degree.

The Doctorate in Computer Science is a research degree granted primarily on the presentation of a substantial research achievement. In order to be admitted to candidacy for the degree, in addition to satisfying the requirements of The Graduate School, students must present evidence of proficiency in two foreign languages and pass with distinction the departmental comprehensive examination. At the discretion of the department, they may also be required to present evidence of successful completion of a major programming achievement.

The areas of research which are actively pursued within the department include: Artificial Intelligence, Discrete Computational Mathematics, Numerical Methods, Programming and Operating Systems, and Theory of Computation. Courses in these and other areas are available to permit the student to pursue a course of study of sufficient breadth and depth to prepare him to perform independent research.

415G	Graph Theory	(3)
416G	Principles of Operations Research I	(3)
420G	Compilers for Algorithmic Languages	(3)
450G	Fundamentals of Programming Languages	(3)
460G	Immigration into Computer Science	(3)
461G	Minicomputers	(3)
505	Data Base Management Systems	(3)
510	Discrete Computer Mathematics I	(3)
530	Computational Methods	(3)
532	Finite Precision Arithmetic	(3)
537	Numerical Analysis I	(3)
538	Numerical Analysis II	(3)
540	Systems Simulation	(3)
541	Advanced Compiler Design I	(3)
550	Introduction to Coding Theory	(3)
570	Operating Systems Design	(3)
575	Theoretical Aspects of Computing	(3)
580	Algorithm Design	(3)

585	Intermediate Topics in Computer Science	(3)
605	Advanced Information Processing	(3)
612	Independent Work in Computer Science	(1-3)
620	Numerical Approximation and Curve-Fitting	(3)
622	Numerical Linear Algebra	(3)
630	Numerical Evaluation of Transcendental Functions	(3)
631	Error Analysis and Certification	(3)
641	Advanced Compiler Design II	(3)
650	Problem Seminar	(3)
660	Artificial Intelligence	(3)
670	Natural Language Processing	(3)
675	Theory of Computation	(3)
680	Seminar in Computer Science	(3)
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	Operating Systems Theory	(3)
768	Residence Credit for Master's Degree	(1-6)

Crop Science

Graduate Faculty: Professors R. C. Buckner, L. P. Bush, G. M. Cheniae, D. L. Davis, D. B. Egli, V. C. Finkner, A. J. Hiatt, (Director of Graduate Studies), M. J. Kasperbauer, J. E. Leggett, G. W. Schneider, N. L. Taylor, T. H. Taylor, B. A. Thielges, Associate Professors Jack Buxton, S. B. Carpenter, P. L. Cornelius, C. T. Dougherty, D. Knavel, C. G. Poneleit, D. M. Tekrony, Richard Wittwer.

Associate Members: Professors J. H. Herron, J. H. Smiley (Extension) Associate Professors M. J. Bitzer, H. R. Burton, A. J. Powell Jr., (Extension) Assistant Professors Paul Lin, J. H. Orf, W. W. Witt

Emeritus Professors: W. G. Duncan, E. N. Fergus, J. F. Freeman, W. C. Templeton, G. T. Webster.

The Crop Science graduate program offers graduate work leading to the Master of Science, Master of Science in Agriculture, 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). 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.

406G	Plant Breeding	(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	(2)

560	Soil-Plant Relationships	(3)
599	Special Problems in Agronomy	(1-4)
619	Cytogenetics	(4)
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)
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	(1-12)
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, William Peters (Chair), Leland Smith, Associate Professors Virginia Atwood, Lowell Eberwein, Phil Nacke, George Szekely.

Associate Members: Associate Professors Truman Stevens, Assistant Professors Gary Anglin, Jacques Benninga, Frank Bickel, Connie Bridge, Elfrieda Hiebert, James Hiebert, Diane Wearne, Angene Wilson.

Joint Appointments: Associate Professors Donald Hoffman and James Simpson.

Emeritus Professor: Lyman Ginger.

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 levels. The doctoral programs prepare leaders for public schools, universities and other educational agencies. Specialization is available in several graduate areas.

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. Consult the Director of Graduate Studies for specific recommendations within this broad framework. The program qualifies teachers for a Standard Certificate if they have completed the appropriate undergraduate curriculum.

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. Consult the Director of Graduate Studies for specific recommendations within the broad framework. The 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.

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 curricular development 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 IN 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 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 held.
3. The curriculum shall include 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 outside the College of Education. These courses must be taken from one or more of the following areas:
Sociology, Speech and Hearing, Learning Theories, Perception, Communication, Linguistics Literature for Children (for elementary majors), or Literature for Adolescents (for secondary majors), Personality, Mental Hygiene, Tests and Measurements, Child or Developmental Psychology (for elementary majors) or Adolescent or Developmental Psychology (for secondary major)

500 Clinical and Laboratory Teaching (4)
501 Teaching Internship (3-12)
511 Special Topics in Early Childhood Education (1-3)
513 Teaching English as a Second Language (3)
514 Test Materials and Methods (3)
521 Materials and Methods in Teaching Mathematics in Secondary School (3)
522 Materials and Methods in Teaching Social Studies in the Secondary School (3)
524 Materials and Methods for Teaching Science in the Secondary School (3)

525	Materials and Methods of Teaching English in the Secondary School	(3)
533	Teaching Reading in the Secondary School	(3)
534	Reading and Study Skills in English	(3)
538	Advanced Arts and Crafts in the Elementary School	(3)
540	Problems in Teaching Reading	(3)
542	Children's Literature	(3)
543	Teaching in the Kindergarten	(3)
544	Utilization of Educational Media	(3)
545	Preparation of Instructional Materials	(3)
546	Introduction to Early Childhood Education	(3)
549	Sociological Aspects of Mass Communication	(3)
550	Teaching the Culturally Different	(3)
552	Modern Educational Problems	(3)
562	Modern Educational Problems	(3)
563	Modern Educational Problems (General Elementary Curriculum)	(3)
564	Modern Educational Problems (General Secondary Curriculum)	(3)
565	Modern Educational Problems (General Curriculum)	(3)
575	Modern Educational Problems (Unclassified)	(3)
576	Modern Educational Problems (Unclassified)	(3)
596	Science in the Elementary School	(3)
600	Workshop in Reading	(1-3)
606	Instructional Television in the Classroom	(3)
607	Basic Instructional Design	(1-3)
608	Applications of Instructional Design	(3)
610	Discipline and Classroom Management	(3)
618	Advanced Study in the Teaching of Reading	(3)
619	Diagnosis of Reading Disabilities	(3)
620	Reading Remediation	(3)
621	Linguistic and Cognitive Foundations of Reading in Early Childhood	(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)
643	Research and Theory in Teaching Reading in Secondary Schools	(3)
646	Organizing Reading Programs	(3)
650	A Study of Research and Theory in Teaching the Disadvantaged	(3)
661	Affective Curriculum Strategies	(3)
662	Integrating Learning Experiences in Early Childhood Education	(2)
670	Advanced Study in the Teaching of Elementary School Mathematics	(3)
680	Internship in Teacher Education	(6)
712	The Elementary School	(3)
713	Curriculum Trends in Early Childhood Education	(3)
714	The Secondary School	(3)
717	The Junior High School	(3)
724	Organization and Supervision of Student Teaching	(3)
730	Problems of the School Curriculum	(3)
732	Principles of Curriculum Construction	(3)
740	Practicum in Teaching Reading and Related Language Arts	(3)
745	Administration of Educational Media Programs	(3)
746	Motion Pictures in Education	(3)
747	Seminar in Reading	(3)
748	Psychology of Reading	(3)
757	College and Adult Reading	(3)
768	Residence Credit for the Master's Degree	(1-12)

769	Residence Credit for the Doctor's Degree	(0-12)
777	Seminar in Curriculum and Instruction (Subtitle Required)	(1-3)
780	Independent Work in Elementary Education	(2)
781	Independent Work in Secondary Education	(3)
790	Research Problems in Secondary Education	(3)
791	Research Problems in Elementary Education	(3)

Dentistry

Graduate Faculty: Professors Robert Biggerstaff (Chair, Department of Orthodontics), Emmett Costich, Raymond Kopczyk, Harold Laswell, Gerald Roth, Stanley Saxe (Director of Graduate Studies), Associate Professors Albert T. Brown, Raymond Bridges, Robert Calmes, Thomas Lillich, Orhan Tunca.

Associate Members: Professors Roland Duell, Jan Kraall, Thomas Mullaney, Associate Professors Jeffrey Okeson, Patrick Sammons, Richard Wynn, Assistant Professors J. F. Camilla Tulloch.

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 examina-

tion 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	(1-12)
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)
CDE 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)
OSG 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
Emeritus Professor: Amry Vandenbosch.

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 examination 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 require-

ments, 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 materials 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 and three letters of character or employment reference to be mailed directly to the Director of the Patterson School.

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

Economics

Graduate Faculty: Professor M. M. Ali (Director of Graduate Studies), Virgil Christian, Charles Haywood, Charles Hultman, Joseph Krislov, Randolph McGee, Rubin Saposnik, Hirofumi Shibata, Don Soule, William Stober (Chair), Robert Stroup, Associate Professors Richard Gift, Merlin Hackbart, Curtis

Harvey, John Madden, James Marsden, Brian Motley, David Ross.

Associate Members: Assistant Professors Glen Blomquist, Stephen Clark, Glen Blomquist, James Facklek, Jeffrey Levin, W. Douglas McMillin, Pamela Nickless, Gregory Richardson, Robert Welch.

Emeritus Professors: Cecil Carpenter, H. W. Hargreaves, James W. Martin.

MASTER OF SCIENCE

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 760 and ECO 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

Objectives

The Master of Arts (M.A.) in economics is the first stage of the Ph.D. program. The M.A. in economics provides preparation for employment in colleges, and in government, business and other organiza-

tions. The program is designed to provide advanced study in:

1. Economic theory.
 2. Quantitative techniques and research skills, and
 3. A specialization within economics.
- Recommended minimal undergraduate preparation—six hours of intermediate level economic theory and six hours of differential and integral calculus.

Requirements

1. A minimum of 30 hours of graduate credit courses, including:
ECO 760 Neoclassical Microeconomic Theory
ECO 762 General Equilibrium Analysis and Welfare Economics
ECO 661 Advanced Macroeconomic Theory
ECO 761 Seminar in Macroeconomic Theory
STA 424 Probability and Distribution Theory
ECO 592 Introduction to Quantitative Economics II
ECO 692 Econometric Methods
Two courses in an elective area of the Ph.D. Program
2. Successful examination in one modern foreign language.
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.
4. Success in a final examination.

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. The requirements for the degree are:

1. Economic Theory. The student must demonstrate competence in economic theory as demonstrated by passing a departmental written examination in economic theory. This examination will be given twice a year, at the beginning of the fall and spring semesters. Students failing the examination will be given a second attempt; those failing on the second attempt will be dropped from the program.
Minimal preparation for the written examination in economic theory can be achieved by taking the following core courses:
ECO 760 Neoclassical Microeconomic Theory
ECO 762 General Equilibrium Analysis and Welfare Economics
ECO 661 Advanced Macroeconomic Theory
ECO 761 Seminar in Macroeconomic Theory
Performance in these courses may be taken into account in evaluating the written examination in economic theory in that exceptional performance in the course may compensate for marginal performance in the examination.
2. Statistics/Econometrics. The student must demonstrate competence in the area of statistics and econometrics. This competence may be demonstrated by satisfactory performance in the following courses:
STA 424 Probability and Distribution Theory
ECO 592 Introduction to Quantitative Economics II
ECO 692 Econometric Methods
or by passing a special examination.
3. Elective Areas. All Ph.D. students must choose two fields of study approved by the student's Advisory Committee. These fields include, but are not limited to, the following: economic theory, econometrics, international economics, public finance, monetary economics, labor economics, economic development, urban and regional economics, economic history, and comparative economic systems. What constitutes minimum course preparation in each field shall be determined by the student's Advisory Committee.
4. Supporting Work. At least 15 hours of supporting course work must be selected.

These courses must be approved by the student's Advisory Committee. This supporting work will provide an opportunity for mastery of the foundations of economics, and will ordinarily include ECO 662—Research Methods and Procedures in Economics and ECO 665—History of Economic Thought I.

5. Foreign Language. The candidate must satisfy The Graduate School language requirement for one modern foreign language.
6. Grades. 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 automatically be dropped by the Department.
7. Qualifying Examinations.
 - a. Written examinations: Written examinations must be taken in the student's field, as part of the requirements for candidacy for the Ph.D. degree. These examinations are given twice a year, at the beginning of the fall and spring semesters, and are scheduled by the student's Advisory Committee. The written examinations will be prepared and graded by faculty members who are specialists in the fields.
 - b. Oral Examination: After passing the written qualifying examinations, the student will be given an oral examination by the Advisory Committee. This oral examination will be concerned with the student's competence in the fields.
8. Dissertation Proposal. In the semester after the candidate passes the qualifying examinations—ECO 797 must be taken for 3 credit hours. This course will be directed by the chairman of the Advisory Committee and will consist of independent study and reading in one of the candidate's fields. As part of the requirements for this course, the student will write a dissertation proposal and present it at a faculty seminar.
9. Internship. The Department will require of all candidates an internship. This internship will usually consist of teaching (3-6 semester hours), though upon approval of the Director of Graduate Studies, the student may select some other activity appropriate to his professional expectations.
10. The Ph.D. Dissertation. The dissertation will be based on original research on a significant topic. The dissertation will be defended in an oral examination.

461G	Market Structure and Anti-Trust Policy	(3)
463G	Analysis of Business Conditions	(3)
464G	Economics of Regulated Industries	(3)
465C	Comparative Economic Systems	(3)
467G	Economic History of the United States and Western Europe: An Economist View	(3)

469G	History of Economic Thought	(3)
470G	International Economic Policy	(3)
471G	International Economics	(3)
473G	Economic Development	(3)
477G	Labor Economics	(3)
479G	Public Finance	(3)
481G	Collective Bargaining	(3)
483G	Regional Economics	(3)
485G	Monetary Economics	(3)
487G	Intermediate Macroeconomic Theory	(3)
488G	Intermediate Microeconomic Theory	(3)
491G	Survey Sampling Design	(3)
493G	Social and Cultural Determinants of Economic Growth and Development	(3)
494G	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)
626	Time Series Analysis	(3)
660	Advanced Microeconomic Theory	(3)
661	Advanced Macroeconomic Theory	(3)
662	Research Methods and Procedures in Economics	(3)
664	Economics of Regulated Industries	(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	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	Optimization and Economic Theory	(3)
692	Econometric Methods	(3)
693	Applied Time Series Analysis	(3)
697	Theories of Comparative Economic Systems	(3)
760	Neoclassical Microeconomic Theory	(3)
761	Seminar in Macroeconomic Theory	(3)
762	General Equilibrium Analysis and Welfare Economics	(3)
768	Residence Credit for the Master's Degree	(1-12)
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	(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, Emanuel Mason, Gordon Liddle, Earl Rankin, Timothy Smith, Judith Worell. Associate Professors Dwight Auvenshine, Fred Danner (Chair), Robert Harman (Adjunct), Edward Kifer, Rory Remer, Harriett Rose (Adjunct), William Stilwell (Director of Graduate Studies).

Associate Members: Associate Professor Raymond Wilkie, Assistant Professors Fred Danner, Steven DeMers, Thomas Guskey, Pamela Remer, Rory Remer, Barbara Witten.

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 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 demonstrates the personal and social characteristics as well as the professional commitment and ethical standards 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 pro-

grams 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 program prerequisites include psychological tests and abnormal psychology. The programs vary from 36 to 39 graduate hours.

MASTER OF ARTS IN EDUCATION DEGREE (SCHOOL PSYCHOMETRIST AND SCHOOL PSYCHOLOGIST)

This program is designed to prepare individuals to meet two State Certification programs, school psychometry and school psychology. The program consists of course work and clinical experience in school settings designed to meet first the minimal requirements of school psychometry and then the full preparation for school psychology. Although two certification programs are offered, the Department advocates the program in psychometry only as an entry program, not terminal preparation for working as a school psychologist. The full program of study toward certification as a school psychologist requires study considerably beyond the traditional masters degree. The exact length of the program is determined, at least partially, by comparing the certification requirements and the student's background.

Upon entering the program students are expected to have the equivalent of an undergraduate major in psychology or education that includes, minimally, courses in personality, abnormal psychology, and tests and measurements. Where deficiencies exist in undergraduate or previous graduate preparation, appropriate course work must be taken early in the graduate program in addition to the courses and requirements of the program. In addition to the psychology background, a teaching certificate and/or teaching experience is a desirable qualification, but not necessary.

The school psychology program focuses on the school psychologist as a general learning consultant for the schools. This

program is designed to prepare school psychologists who are knowledgeable in the assessment and programming needs of children with legally defined handicapping conditions, those with learning and adjustment difficulties, exceptional non-handicapped children such as the gifted and talented, children from culturally or ethnically different backgrounds, and the needs and normal developmental difficulties of more typical children.

The program is designed to develop specific competencies in school psychologists such as consultation with teachers, administrators, and other school personnel in classroom management, curriculum, and teaching strategies; assessment skills in group, individual, psychometric and behavioral methods; evaluation and research skills in aiding in policy making and the implementation of state and federal as well as local studies; and, implementation skills in terms of strategy selection for work with children, teachers, parents, other guidance and special education personnel, and administrators.

The school psychology program incorporates the Masters of Science or Arts in Education degree as part of this preparation. The student's post-masters work may lead to receipt of the Educational Specialist degree or in selected cases may become part of the Ed.D. or Ph.D. degree program.

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 school psychology, 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 prerequisites include psychological tests and abnormal psychology. 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. There is also a 60-hour program including the Master of Science in Education degree program plus a full-time one-semester internship and additional course work. This program 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)
520	The Secondary School Pupil.....	(3)
522	Educational Tests and Measurements....	(3)
548	Educational Psychology.....	(3)
557	Educational Statistics.....	(3)
570	Introduction to Psychological Services in Schools.....	(3)
600	Life Span 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)
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)
665	Practicum in Counseling Psychology....	(3-6)
666	Psychology of Career Counseling.....	(3)
669	Identifying and Providing for Individual Student Needs.....	(3)

670	Psychoeducational Strategies of Intervention.....	(3)
671	Seminar in Psychoeducational Consultation in Schools.....	(3)
675	Practicum in School Psychology.....	(3-6)
677	Advanced Studies in Community Mental Health.....	(3)
680	Child Guidance and Parent Counseling..	(3)
683	Topics in Counseling Psychology.....	(1-3)
686	Theory and Methods in Marriage And Family Counseling.....	(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)
762	Organization and Operation of Pupil Services.....	(3)
763	Research and Evaluation in Guidance... (3)	
765	Independent Work in Counseling Psychology.....	(2)
768	Residence Credit for the Master's Degree.....	(1-12)
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), Benjamin J. Leon (Chair), Earl Steele, Prasad Kadaba, Syed Nasar. Associate Professors Frank M. Brown, Raymond Distler, Clayton R. Paul, Lee Todd, and Hsi-Han Yeh.

Associate Members: Associate Professor J. Robert Heath, Assistant Professor Stephen A. Dyer

The Department of Electrical Engineering offers programs leading to the Master of Science in Electrical Engineering and Ph.D. Areas of current research interest include: electric machines, control theory, computer engineering, digital signal processing, circuit theory, solid state electronics, cathodochromic displays, quantum electronics, communications systems, and electromagnetic compatibility. 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.

402G	Electronic Instrumentation and Measurements.....	(3)
409G	Advanced Electrical Engineering Laboratory I.....	(2)
415G	Electromechanics I.....	(3)
416G	Electrical Engineering Laboratory III..	(2)
420G	Electrical Engineering Analysis I.....	(3)

461G	Electronic Circuits I	(3)
462G	Electrical Engineering Laboratory II	(2)
467C	Electric and Magnetic Fields	(3)
468G	Fields and Waves	(3)
471G	Linear Feedback Control Systems	(3)
480G	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)
522	Antenna Design	(3)
523	Microwave Circuit Design	(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)
583	Microprocessors	(3)
584	Computer Aided Design	(3)
595	Independent Problems	(1-3)
599	Topics in Electrical Engineering	(2-3)

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.

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)
619	Problems Seminar in Operations Research	(3)
622	Advanced Electrodynamics	(3)
623	Field Theory of Guided Waves	(3)
625	Numerical Methods in Radiation and Scattering	(3)
629	Research Topics in Electromagnetics	(3)
630	Digital Signal Processing	(3)
639	Advanced Topics in Signal Processing and Communications	(3)
640	Continuous Stochastic Processes	(3)
642	Signal Detection, Estimation, and Classification	(3)
650	Electro-Optical Properties of Materials	(3)
660	Electronic Device Design	(3)
661	Solid-State Electronics	(3)
663	Microwave Properties of Materials	(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)
685	Computer Design and Architecture	(3)
686	Advanced Computer Architecture Design	(3)
768	Residence Credit for the Master's Degree	(1-12)

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, Oscar W. Dillon, Jr., Donald C. Leigh, Frank J. Rizzo, David Shippy (Director of Graduate Studies), Theodore R. Taichert (Chair), Associate Professors Louis M. Brock, Stanley E. Jones.

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. To be admitted to the master's degree program, a student normally must have at least an overall grade-point average of 3.0 and Graduate Record Examination scores of 700 (Quantitative) and 500 (Analytical).

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 and (7) experimental methods. 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 composite materials. 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)
760	Research Project in Engineering Mechanics	(0)
768	Residence Credit for the Master's Degree	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
780	Special Problems in Engineering Mechanics	(3)

English

Graduate Faculty: Professors Joseph Bryant (Chair), John Cawelti, John L. Clubbe, Guy Davenport, Robert Evans, Robert Hemenway (Director of Graduate Studies), Stephen Manning, Jerome Meckier, Donald Ringe, John Shawcross, Associate Professors R. Gerald Alvey, Thomas Blues, William Campbell, Lee Elioseff, Walter Foreman, Joseph Gardner, William Gordon, John L. Greenway, James Baker Hall, Joan Hartwig, Kevin Kiernan, Charles Rowell, Larry Swingle, and Arthur Wrobel.

Associate Member: Associate Professors Joan Blythe and David Durant.

Emeritus Professors: George Brady, Arthur Cooke, John Cutler, Hill Shine, Thomas Stroup and William Ward.

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 advanced 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 Advisory 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.

414G	Introduction to Modern English Linguistics	(3)
421G	Chaucer	(3)
422G	English Renaissance: 1500-1600	(3)
423G	English Renaissance: 1600-1660	(3)
425G	Shakespeare Survey	(3)
426G	Shakespeare Studies I	(3)
427G	Shakespeare Studies II	(3)
428G	Milton	(3)
430G	The Restoration and Early 18th Century: 1660-1730	(3)
431G	The Later 18th Century: 1730-1780	(3)
435G	The Romantic Movement: 1780-1815	(3)
436G	The Romantic Movement: 1815-1830	(3)
438G	Victorian Period: 1830-1860	(3)
439G	Victorian Period: 1860-1900	(3)
440G	The 18th Century English Novel	(3)
441G	The 19th Century English Novel	(3)
442G	The 20th Century English Novel	(3)
443G	Contemporary British Novel	(3)
446G	Twentieth Century British Literature	(3)
451G	American Literature, 1800-1860	(3)
452G	American Literature, 1860-1900	(3)
453G	American Literature Since 1900	(3)
454G	American Novel Before 1900	(3)
455G	Modern American Novel	(3)
466G	Modern Drama	(3)
473G	Survey of World Folklore	(3)
475G	British and American Ballad and Folksong	(3)

476G	Folklife and Material Folk Culture	(3)
477G	Regional, Occupational, and Ethnic Folklore of the United States	(3)
478G	Appalachian Folklore	(3)
479G	The Folktale	(3)
480G	Special Studies in Film	(3)
490G	English Drama I	(3)
491G	English Drama II	(3)
501	Workshop in Imaginative Writing	(3)
509	Composition for Teachers	(3)
510	American English	(3)
512	Modern English Grammar	(3)
513	Teaching English as a Second Language	(3)
514	Test Materials and Methods	(3)
515	Phonological Analysis	(3)
516	Grammatical Analysis	(3)
518	History of the English Language	(3)
519	Introduction to Old English	(3)
521	Middle English Literature	(3)
550	American Literature Before 1800	(3)
560	Comparative Literature: Grecian and Roman	(3)
561	Comparative Literature: Medieval and Renaissance	(3)
562	Comparative Literature: 17th Through 19th Century	(3)
563	Comparative Literature: Twentieth Century	(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)
619	Beowulf	(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	(1-12)
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 (Chair and Director of Graduate Studies), Juan Rodriguez, Richard Thurston. Associate Professors Douglas Dahlman, Paul Freytag, Gerald Nordin, and Kenneth Yeargan.

Associate Members: Extension Professor Harley Raney, Associate Extension Professors C. M. Christensen and Wesley Gregory. Assistant Professors Grayson Brown, and Daniel A. Potter.

The Department of Entomology offers graduate work leading to the Master of Science, Master of Science in Agriculture, 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.

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)
660	Immature Insects	(4)
665	Insect Ecology and Behavior	(3)
667	Principles of Animal Systematics	(3)
670	Experimental Methods in Entomology	(2)
680	Biological Control of Insects	(3)
768	Residence Credit for the Master's Degree	(1-12)
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

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

Associate Members: Assistant Professors Jacques Benninga, Peggy Kimsey, Maryann Paynter, Vicki Schram.

The Department of Family Studies offers the Master of Science in Family Studies. There are four areas of concentration: Early Childhood Education; Individual Development within the Family; Family Development, and Family Economics and Management.

The Master of Science in Family Studies requires 36 credit hours. At least two-thirds of the minimum requirements must be in regular courses, and at least half of the minimum requirements must be in courses numbered on the 600 or 700 level. A minimum of 18 hours must be within the department. Plan A requires 36 hours, six of which are thesis credit hours; Plan B requires 36 class hours. Plan A is encouraged for students who may wish to emphasize theory and research and/or who plan to enter another advanced degree program. Electives within each area of concentration are available in the social sciences and in other supporting disciplines.

- 503 Family Housing Issues (3)
- 507 Assessment of Young Children (2)
- 509 The U.S. Family in Historical
Perspective (3)
- 510 Socialization in the Family (3)
- 550 Child Development and Family Life
in Appalachia (3)
- 551 Woman in Contemporary Society (3)
- 552 Organization and Administration of Early
Childhood Education Programs (3)
- 553 The Child in His/Her Family (3)
- 554 Working with Parents (3)
- 555 Fostering Cognitive Development
in Children (3)
- 557 Infant Development (3)
- 561 Management for Families with
Limited Resources (3)
- 562 Family Management for Multi-Roles (3)
- 563 Family Legislation and Public
Policy (3)
- 573 Family Life Education (3)
- 586 Field Experience in Family Economics
and Management (1-6)
- 595 Special Problems in Individual and
Family Development (1-3)
- 596 Special Problems in Family Economics
and Management (1-3)
- 599 Field Experiences (3)
- 602 Consumer Economics (3)
- 603 Theory and Research in Family Economics
and Management (3)

- 604 Culturally Different Children and
Families (3)
- 605 Practicum in Directing Early Childhood
Programs (4)
- 606 Child Advocacy (1)
- 624 Perspectives on Human Sexuality (3)
- 652 Readings in Family Relations (3)
- 653 Family Theory and Dynamics (3)
- 654 Life Span Human Development
and Behavior (3)
- 655 Theory and Dynamics of Human
Development (3)
- 656 Adult Development in the Family (3)
- 658 Adolescent Development (3)
- 662 Social and Economic Decisioning in the
Family (3)
- 668 Allocation of Family Resources (3)
- 684 Family Management Analysis (3)
- 686 Theory and Methods in Marriage and
Family Counseling (3)
- 768 Residence Credit for the
Masters Degree (1-12)
- 773 Seminar in Family Economics and
Management (3)
- 775 Seminar in Human Development and Family
Relations (3)
- 785 Advanced Problems in Individual and
Family Development (1-3)
- 786 Advanced Problems in Family Economics
and Management (1-3)
- 790 Familial and Developmental Research
Methods (3)

Forestry

Graduate Faculty: Professor Bart Thielges (Chair). Associate Professors Stanley Carpenter, George Coltharp (Director of Graduate Studies), Robert Wittwer.

Associate Members: Associate Extension Professor Donald Graves; Assistant Professors William Carlson, Joseph Chang, David Erickson, Calvin Liu, William McComb, Robert Muller, James Olson.

The Department offers graduate work leading to the Master of Science in Forestry and 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, tree physiology, forest wildlife, forest biometrics, forest economics, silviculture, recreation, and surface mine reclamation.

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

Additional information concerning the graduate program in forestry may be ob-

tained by contacting the Director of Graduate Studies.

- 511 Forest Regeneration (3)
- 512 Forest Tree Physiology (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 . (1-12)
- 781 Special Problems in Forestry (1-3)
- 791 Research in Forestry (1-3)

French Language and Literature

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

Associate Members: Professor John Rea and Assistant Professor G. Baril-van Oene.

Emeritus Professor: Clark L. Keating.

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.

The student selects a program from a variety of courses in this section in French literature, language, civilization, cinema and literature and the arts. He is then examined over his program and an appropriate reading list specified by the Department. The Master's Examination for each candidate is prepared and evaluated by a committee of three members of the French graduate faculty which will consider the candidate's course program and the M.A. reading list in preparing the examination.

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 days 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, fol-

lowed by an oral examination, to be held after the written examinations 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, to be submitted in accordance with the regulations of The Graduate School, must be written in one of the three areas chosen for the qualifying examination.

The Ph.D. written examinations are given at the convenience of the student and faculty 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 not less frequently than every eighth semester.

421G	Topics in French Literature in Translation I	(3)
422G	Topics in French Literature in Translation II	(3)
423G	French Literature in Translation: 20th Century	(3)
436G	A Survey of French Literature of the Middle Ages and Renaissance	(3)
438G	A Survey of French Literature of the 17th and 18th Centuries	(3)
439G	A Survey of French Literature of the 19th Century	(3)
440G	A Survey of French Literature of the 20th Century	(3)
460G	Masterpieces of the French Novel	(3)
*FR 435G, 437G, 439G, 462G will normally be offered in the fall; FR 436G, 438G, 440G, 461G in the spring.		
461G	Masterpieces of French Drama	(3)
462G	Masterpieces of French Poetry	(3)
500	Introduction to French Film	(3)
501	French Literature and the Arts: The Middle Ages	(3)
502	French Literature and the Arts: La Belle Epoque	(3)
503	French Literature and the Arts: Surrealism	(3)
504	Topics in French Literature and Culture	(3)
507	Translation and Interpretation	(3)
510	Linguistic Structure of Modern French	(3)
516	Introduction to Early French	(3)
550	France Today	(3)
553	The Teaching of Modern Foreign Languages	(3)
600	Special Topics in French Film	(3)
601	Poetic Vision	(3)
602	Narrative Tradition	(3)
603	The Development of the French Language	(3)
604	The Tragic Mode	(3)
605	Comic Fiction	(3)
606	Literature of the Middle Ages	(3)

608	Renaissance Storytellers	(3)
609	Classic Theater	(3)
615	The Age of Voltaire	(3)
617	Romanticism	(3)
620	The New Avant-Garde: Literary Trends Since World War II	(3)
650	Cultural History of the French People	(3)
714	Seminar in French Linguistics	(3)
715	Seminar in Medieval French Studies	(3)
716	Seminar in French Literature of the Renaissance	(3)
717	Seminar in Seventeenth Century French Literature	(3)
718	Seminar in Eighteenth-Century French Literature	(3)
719	Seminar in Nineteenth Century French Literature	(3)
720	Seminar in Twentieth-Century French Literature	(3)
768	Residence Credit for Master's Degree	(1-6)
769	Residence Credit for Doctor's Degree	(1-12)
780	Special Studies in French	(3)

Geography

Graduate Faculty: Professors Stanley Brunn (Chair), Thomas P. Field, P. P. Karan, Associate Professors W. A. Bladen, Thomas Leinbach, Karl Raitz (Chair), Gary Shannon, Richard Ulack (Director of Graduate Studies), W. A. Withington.

Associate Members: Assistant Professors Robert Cromley and Justin Friberg.

Emeritus Professors: Joseph Schwendeman

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 including:

Cultural Geography of the United States—Urban and rural settlement patterns and processes, past and present; distribution and interaction of ethnic groups.

Geographic Analysis—Computer modeling, computer cartography, locational analysis, diffusion simulation, geographic information systems, normative models.

Geography of the Third World—Problems of development in Africa, Latin America, South Asia, and especially Southeast Asia. Topics include population, urbanization, industrial development, transportation, political-social issues, and economic growth.

Industrial Geography—Location theory, nonmetropolitan industrialization, industrial development, spatial analysis of manufacturing systems.

Medical Geography—Health care delivery; space, time, and illness behavior; epidemiology; disease ecology.

Political Geography—Viability of political units, political development, economic interde-

pendence, electoral geography, governmental policy, organization of space.

Population Geography—Dynamics of population growth and change; internal migration.

Regional Development—Economic, social, and political problems within developed countries especially Appalachia and the southeastern United States

Social Geography—Ethnic and minority groups, aging, welfare issues, social impact assessment, environmental perception, technological hazards.

Transportation Geography—Influence of transport systems on human activity, route locations, network flows, regulation impact, commuting behavior.

Urban Geography—Basic principles and theories of urban systems, social geography of the city, geographies of growth.

The faculty includes members who have a major regional research interest, including extensive field experience, in the following areas: Latin America, Southeast and South Asia, including adjacent Himalayan or highland Asia; 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. Course work required in the Ph.D. program consists of (1) core courses (GEO 700, 702, 707) in the theory and methodology of geography; (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. A program designed to meet the professional academic goals of each doctoral candidate is outlined in consultation with the Director of Graduate Studies and the candidate's Advisory Committee.

Applicants for the M.A. degree in geography follow a broadly based program which consists of: 1) required courses (GEO 500, 702, and 710); 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 student's option and with the approval of the Director of Graduate Studies, a non-thesis degree (Plan B requiring six additional credits) is permitted. Students selecting the Plan B option must complete a project which is more limited in scope and design than a thesis as part of the formal requirements for the degree. The M.A. student may not take more than six hours of course work below the 600 level.

The program is tailored to meet each student's particular needs and requirements, and numerous 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.

410G	Introduction to Planning	(3)
420G	Urban and Regional Planning	(3)
430G	Land Use Planning	(3)
450G	Planning Research Methods and Writing	(3)
460G	Topics in Planning	(3)
500	Introduction to Analytic Techniques in Geography	(3)
501	Field Studies in Geography	(3)
505	Practicum in Cartography	(3)
506	Introduction to Computer Cartography	(3)
507	Remote Sensing for Geographers and Planners	(3)
520	Geography of the United States and Canada	(3)
521	Geography of Appalachia	(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)
545	Transportation Geography	(3)
546	Spatial Development and Policy	(3)
550	Geography of Natural Resources	(3)
555	Industrial Location	(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 Analysis	(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	(1-12)
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 W. H. Blackburn, William Brown, W. H. Dennen (Chair), J. C. Ferm, W. C. MacQuown, N. Rast (Director of Graduate Studies), J. Thraillkill. Associate Professor B. R. Moore.

Associate Members: Associate Professor I. S. Fisher. Assistant Professors F. R. Ettensohn, R. L. Street.

Emeritus Professors: Arthur McFarlan and Vincent Nelson.

The Department of Geology offers graduate work leading to the M. S. and to the Ph.D degrees. The credentials of each applicant are considered individually and applicants from other scientific disciplines are encouraged to apply. Applicants with non-geology backgrounds will be required to attain geologic proficiency through course work. All applicants should have demonstrated competence at the undergraduate level and a founding in the basic sciences equivalent to that of B.S. Graduates of this Department. 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 the scientific literature.

The principal fields of study offered are geochemistry, hydrogeology, paleoecology, sedimentology, geophysics, stratigraphy, structural geology and tectonics, and coal geology.

Resources for the conduct of advanced studies include reference collections, an outstanding library, sample preparation and field equipment, portable diamond-drilling apparatus and field vehicles. The geochemical laboratories include equipment for x-ray fluorescence and diffraction, atomic absorption, spectrophotometry, gamma-ray spectrometry, fluorometry, dc arc and laser emission spectrometry. Research apparatus for remote sensing, petrographic microscopy, cathodoluminescence, and specialized equipment for sedimentologic and paleontologic studies are available within the depart-

ment. Geophysical facilities include instrumentation for gravity, magnetic and seismic studies. A permanent, six-component, high-quality seismic observatory is presently being installed.

Additional extra-departmental facilities for computing, neutron activation, electron microscopy, rock mechanics and clay mineralogy are readily available.

420G	Structural Geology	(3)
450G	Stratigraphy and Sedimentation	(3)
501	Stratigraphic Paleontology	(3)
510	Ore Deposits	(3)
511	Petroleum Geology	(3)
513	Remote Sensing and Aerial Photography	(3)
515	Coal Geology I	(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)
571	Electrical, Gravity, and Magnetic Geophysical Exploration	(3)
572	Seismology and Seismic Exploration	(3)
602	Paleoecology	(3)
603	Micropaleontology	(3)
612	Mineral Deposits	(3)
615	Coal Geology II	(3)
620	Tectonics	(3)
624	Mesoscopic Structures	(3)
640	Analytic Methods in Geology	(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	(1-3)
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	(1-12)
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 Members: Assistant Professor Jay F. Bodine, Karl J. Fink and Lilian Hoverland.

Emeritus Professors: Paul Stapf and Paul Whitaker.

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, 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, literature from the age of Goethe to the present, literary theory and intellectual history. 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.

GERMAN

415G	German Authors	(3)
416G	Genres of German Literature	(3)
420G	Special Studies in German Literary and Cultural History	(3)
500	Swedish	(3)
501	Swedish Literature from Bellman to the Present	(3)
504	Danish	(3)
505	Danish Literature from Holberg to the Present	(3)

506	Tutorial in Minor Germanic Language	(3)
510	Medieval Scandinavian Literature in Translation	(3)
511	Scandinavian Literature in Translation: Holberg to Lagerkvist	(3)
512	Introduction to Graduate Studies	(3)
515	Studies in German Literary History	(3)
520	Special Topics Seminar	(3)
522	German Impressionism	(3)
531	Structure of the German Language	(3)
532	History of the German Language	(3)
533	Introduction to Middle High German	(3)
534	Life and Works of Goethe	(3)
538	Advanced German Conversation and Composition	(3)
540	Germany Since 1871	(3)
553	The Teaching of German	(3)
610	Old Icelandic	(3)
611	Old Icelandic	(3)
615	Studies in Major Authors	(3)
616	Studies in Genre	(3)
622	Theories of Literature in German	(3)
623	Studies in the 15th and 16th Centuries	(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)
629	Studies in the 19th Century	(3)
630, 631	Twentieth Century German Literature	(3 ea.)
633	Old High German	(3)
640	Studies in Germanic Language and Literature	(3)
642	Medieval German Literature	(3)
720	Special Topics in the Middle Ages	(3)
723	Special Topics in the 15th/16th Centuries	(3)
724	Special Topics in the 17th Century	(3)
725	Special Topics in the 18th Century	(3)
729	Special Topics in the 19th Century	(3)
730	Special Topics in the 20th Century	(3)
768	Residence Credit for Master's Degree	(1-12)
769	Residence Credit for 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 (Chair), Joseph Gruber, Pentti Terasilinna. Associate Professors Jay T. Kearney (Director of Graduate Studies).

Associate Members: Associate Professors Dean Cur-

rier, Dennis Vinton. Assistant Professors Sharon Hunt, Nancy Jose, Stan Labanowich, Ralph Mann, Andrew Weiner.

Emeritus Professors: Ernest Jokl and Don Cash Seaton.

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: recreation, therapeutic recreation, school health education administration, generalist physical education, sport psychology, exercise physiology, biomechanics, or adopted physical education. Additionally, the Department has recently been approved to offer work leading to an Ed.D. degree in physical education. Specifics of this program are available from the Director of Graduate Studies.

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, 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	
Electives selected from above areas	9
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
Electives selected from above areas	9

For school health education the prerequisites are:

Microbiology	3-5
Anatomy and Physiology	3-6
Community Health	2-3
School Health Education	2-3
Methods in Health Education	2-3
First Aid and Emergency Care	2
Special Topics in Health	6

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 the physical education areas, therapeutic recreation, or recreation administration, all candidates are required to complete the following.

PLAN A (Thesis Option)		
EDP 557 Educational Statistics	3-4	
or		
STA 570 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 557 Educational Statistics	3-4	
or		
STA 570 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.

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)
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	(1-12)
770 Seminar in Physical Education	(3)
782 Independent Research	(3)

RECREATION

570 Landscape Design of Park and Recreation Areas	(3)
572 Principles and Practices in Therapeutic Recreation	(3)
573 Administration and Organization of Recreation	(3)
575 Interpretations of Leisure and Recreation	(3)
577 Practicum in Recreation	(3-9)
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

509 Workshop in Health and Safety	(2)
530 Administration of Health and Safety Education	(3)
535 School Health Dilemmas of Special Populations	(3)
609 Seminar in Health and Safety Education	(3)

Health Radiation Sciences

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

*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 Radiological Medical Physics.

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 361 or its equivalent is a prerequisite for both programs, and Computer Science 221 or its equivalent is also a prerequisite for the program in Radiological Medical Physics.

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

BIO/RM 540 General Radiation Biology	(4)
BIO/RM 640 Biological Effects of Radiation	(3)
PHY/RM 472 Interaction of Radiation with Matter	(3)
PHY 535 Experimental Physics, Atomic and Nuclear	(2)
RM/PHY/HRS 545 Radiation Hazards and Protection	(3)
HRS 710 Seminar in Bioradiation Science	(1)
STA Basic Statistical Analysis	(4)
Total	20

Master of Science in Radiological Medical Physics

ADDITIONAL PROGRAM

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

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	(4-8)

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 after the course work has been completed.

Total 32 (minimum)

545	Radiation Hazards and Protection	(3)
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)

Higher Education

Graduate Faculty: Professors Charles F. Elton (Chair and Director of Graduate Studies), Juanita Fleming, Associate Professor Edgar L. Sagan.

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

Emeritus Professor: Collins Burnett, Morris Cierley.

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 Advisory 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.

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, Mary Wilma Hargreaves, George Herring, Robert Ireland, Humbert Nelli, Charles Roland, Robert Seager, Gerard Silberstein, Robert Warth, Associate Professors Lance Banning (Director of Graduate Studies), William Chambliss Steven Channing, Randolph Daniel, Bruce Eastwood, Donald Nugent, Robert Olson, Robert Randall, John Scarborough, Joe Thompson (Chair).

Associate Members: Professor Harry Caudill, Assistant Professors Eric Christianson, Nancy Dye, Daniel Smith.

Emeritus Professors: Thomas Clark, James Hopkins.

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 Advisory 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 Advisory 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 an Advisory Committee composed of representatives of the areas and fields under four 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 interpretative 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 since 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

Special Preparation: The student will be prepared in a fourth 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. Structured programs are available in historic preservation, archives, and communications.
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 History 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 Advisory Committee.

Students' success in their General Preparation will be evaluated by a written examination. Their success in the Intensive and Special Preparations is evaluated by both written and oral examinations.

I. EUROPEAN HISTORY

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)
516	Science and Western Culture I	(3)
517	Science and Western Culture II	(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 and Cultural 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)
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)
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 1870	(3)
557	The British Empire and Commonwealth after 1870	(3)
558	History of Canada after 1860	(3)

III. AMERICAN HISTORY

560	Colonial America to 1748	(3)
561	The American Revolution, 1763-1789	(3)
562	The New Republic, 1789-1820	(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)
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)
585	Spain and Portugal in America	(3)
586	Modern Mexico	(3)
587	Modern Venezuela, Columbia, and Latin Caribbean	(3)
588	American Social History to 1865	(3)
589	American Social History Since 1865	(3)
596	U.S. Family in Historical Perspective	(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 students 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	(1-3)

COURSES IN THE 700 GROUP

These seminars are designed to introduce students to the methods, resources and auxiliary disciplines necessary to research in the desig-

nated 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, 1607-1815	(3)
711	Seminar in American History, 1815-1865	(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	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)

Home Economics

Graduate Faculty: Professors Linda Chen (Associate Dean for Research and Graduate Education), Marjorie Stewart (Dean), Extension Professor Doris Tichenor (Assistant Extension Director for Home Economics and Director for Community Development), Emeritus Professor: Statie E. Erikson

The Graduate School rules and regulations for the master's degree apply to the degrees offered in the College of Home Economics. Plan A requires 24 hours plus a thesis except in the Department of FAM which requires 30 hours plus a thesis. 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 Environment, Design and Textiles; and Nutrition and Food Science. For information about Home Economics Education see Vocational Education.

Horticulture and Landscape Architecture

Graduate Faculty: Professors Dean Knavel, Raymond Lockard (Director of Graduate Studies), Hubert Mohr, William Schneider, A.S. Williams (Chair). Associate Professors Jack Buxton, Thomas R. Kemp, and Leonard Stolz

Associate Members: Associate Professor Carl Chaplin, Assistant Professor Dale Maronek and John C. Snyder.

The Department offers graduate work leading to the Master of Science in Agri-

culture 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.

400G	Special Topics in Horticulture	
	Vegetable Crop Production	(1-3)
502	Pomology: Deciduous Fruits II	(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	(1-12)
770	Seminar	(1)
790	Research in Horticulture	(1-4)

Human Environment: Design and Textiles

Graduate Faculty: Professor Richard Rankin (Chair and Director of Graduate Studies).

Associate Members: Associate Professor Terry Rothgeb, Assistant Professors Sharla Hoskin, Kathy Lafferty, Deborah LaMar, Terry Rothgeb, Laura Szekely.

The Department of Human Environment Design and Textiles offers the Master of Arts in Interior Design and the Master of Arts in Textiles and Clothing. Both Plan A—24 credits plus thesis, and Plan B—36 credits, are offered.

INTERIOR DESIGN

401G	History of Interiors I: A Survey Through the 18th Century	(3)
402G	History of Interiors II: A Survey of 19th and 20th Centuries	(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	(1-12)
772	Seminar in Interior Design	(2)
783	Special Problems in Interior Design	(1-3)

TEXTILES AND CLOTHING

430G Tailoring	(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	(1-12)
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, Lois Chan, Michael Harris, Timothy Sineath (Dean and Director of Graduate Studies). Associate Professors Joann Rogers, Thomas Waldhart. Associate Members: Assistant Professors Rosemary DuMont, and Wayne Wiegard.

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

- 36 total credit hours, 30 of which must be graduate credit hours
- 9 hours—Required Introductory Courses (LS 530, 550, 560)
21 hours elective
6 hours thesis credit
- 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:

- by examination at beginning of each semester.
- by successful completion of special, non-credit, one semester course in a foreign language.
- by having completed the undergraduate language requirement at the University of Kentucky with a B average.

- 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

- 36 credit hours, 30 of which must be graduate credit hours
- 9 hours—Required Introductory (LS 530, 550, 560)
6 hours—advanced bibliography or technical processing courses
6 hours—cognate courses on 500 level or above
15 hours—elective
- 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

- 36 total credit hours, 30 of which must be graduate credit hours
- 9 hours—Required Introductory Courses
27 hours—elective
- 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.

504 Social Foundations of Librarianship	(3)
510 Children's Literature and Related Materials	(3)
513 Literature and Related Materials for Early Adolescence	(3)
514 Information Resources and Services for Young Adults	(3)
530 Reference and Information Services	(3)
547 Administration of School Media Centers	(3)
550 Introduction to Cataloging and Classification	(3)
560 Introduction to Library Management	(3)
575 Professional Field Experience	(3)
576 School Media Practicum	(3-12)
586 Utilization of Educational Media	(3)
587 Multi-Media Materials in Libraries	(3)

602 History of Books and Printing to 1800	(3)
603 History of Books and Printing 1800 to the Present	(3)
604 History of Libraries	(3)
605 Introduction to Information Sciences	(3)
608 Methods of Research in Librarianship	(3)
609 Current Problems in Library and Information Science	(3)
610 Creative Library Programs for Children	(3)
611 Critical Analysis of Children's Literature	(3)
618 Adult Information Needs and Services	(3)
620 Historical and Analytical Bibliography	(3)
622 Social Science Information	(3)
623 Information in the Humanities	(3)
624 Information in Science and Technology	(3)
626 Government Publications	(3)
630 Computer-Based Reference Systems and Services	(3)
635 Information Storage and Retrieval Systems	(3)
640 Medical Librarianship	(3)
641 Law Librarianship	(3)
645 Public Libraries	(3)
646 Academic Libraries	(3)
647 Current Trends in School Media Centers	(3)
650 Technical Processing Systems	(3)
655 Descriptive Cataloging	(3)
656 Subject Cataloging and Classification	(3)
659 Collection Development	(3)
660 Administrative Behavior in Library Management	(3)
665 Library Systems Management	(3)
686 Cataloging and Indexing of Multi-Media Materials	(3)
687 Non-Print Media in Libraries	(3)
690 Special Topics in Librarianship	(3)
695 Independent Study in Library Science	(3)
768 Residence Credit for the Master's Degree	(1-12)

Mathematics

Graduate Faculty: Professors J.D. Buckholtz, Thomas Chapman, Donald Coleman, Paul Eakin, (Chair), Carl Eberhart, Edgar Enochs, Steven C. Ferry, Michael Freeman (Director of Graduate Studies), Brauch Fugate, William B. Gragg, Lawrence Harris, Thomas Hayden, Henry Howard, Frank Keogh, Kenneth Kubota, Anders Linqvist, John Mack, Raymond Rishel, Wimberly Royster, Ted Suffridge, Clasine Van Winter, James H. Wells, Roger Wets. Associate Professors David Adams, James Beidleman, James Brennan, Richard Carey, Frederick Cohen, Raymond Cox, Graeme Fairweather, Ron Gariepy, Robert Jensen, David Johnson, Daniel Kubert, John Lewis, Avinash Sathaye, James Simpson.

Associate Members: Assistant Professors Julio Diaz, Robert Molzon.

Emeritus Professor: S. M. Shah.

The Department of Mathematics grants the M.A., M.S., M.A.T.M., and Ph.D. degrees. There are no specific course prerequisites for admission; however, two semester 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 Master of Arts in Teaching Mathematics degree, designed for persons holding secondary school teaching certificates in mathematics, is based on a 30 credit-hour program. There is no foreign language requirement.

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. The Department will further require of all candidates an internship. This internship will usually consist of teaching (three to six semester hours), though upon approval of the Director of Graduate Studies, the student may select some other activity appropriate to his professional expectations. 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.

410G	Mathematics for Economists	(3)
411G	Models in Mathematical Biology	(3)
413G	Topics in Mathematics	(3)
415G	Graph Theory	(3)
416G	Principles of Operations Research I	(3)
417G	Principles of Operations Research II	(3)
432G	Methods of Applied Mathematics I	(3)
433G	Methods of Applied Mathematics II	(3)
441G	Geometry I	(3)
442G	Geometry II	(3)
471G	Advanced Calculus I	(3)
472G	Advanced Calculus II	(3)
481G	Differential Equations I	(3)
483G	Differential Equations II	(3)
485G	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)
511	Models in Mathematical Biology II	(3)
515	Mathematical Programming and Extensions	(3)
522	Theory of Matrices	(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)
537	Numerical Analysis I	(3)
538	Numerical Analysis II	(3)
551	Topology I	(3)
561	Modern Algebra I	(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)
613	Problems Seminar in Operations Research	(3)
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)
620	Advanced Numerical Analysis	(3)
621	Advanced Numerical Analysis II	(3)
622	Numerical Linear Algebra	(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)
731	Seminar in Mathematical Biology	(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	(1-12)
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 Birkebak, Merle Carter, Clifford Cremers (Chair), Roger Eichhorn, James Funk, James Lafferty, Robert Altenkirch, Associate Professors Pramode Bhagat, Otfried Hahn (Director of Graduate Studies), Charles Knapp, Shiva Singh.

Associate Members: Professor Orville Stewart, Assistant Professors Robert Peck, and Andrew Seybert.

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 and a GPA of 2.8/4.0 on all undergraduate work. 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 take longer. 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 it necessary to take 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.

475G	Introduction to Nuclear Engineering . . .	(3)
480G	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)
531	Fluid Dynamics I	(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)
568	Solar Energy Systems	(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.

610	Engineering Acoustics	(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)
631	Fluid Dynamics II	(3)
632	Compressible Fluid Flow	(3)
633	Dynamic and Thermal Behavior of Gas-Liquid Systems	(3)
634	Turbulent Flows	(3)
640	Advanced Analysis and Simulation of Dynamic Systems	(3)
642	Kinematics of Machinery I	(3)
645	Systems Concepts and Analysis	(3)
647	System Optimization I	(3)
651	System Optimization II	(3)
663	Nuclear Reactor Analysis 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	(1-12)
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 Bioengineering	(3)
782	Advanced Topics in Heat Transfer	(3)
783	Topics in Advanced Systems Theory	(3)

Medical Microbiology And Immunology

Acting Chair: Roger Lambson

The Department of Medical Microbiology and Immunology provides an interdisciplinary approach to the study of basic cellular processes encompassing prokaryotes and eukaryotes, including man. The Department is multidisciplinary in its research and teaching. Research areas include microbial physiology, immunology, cell and molecular biology, genetics and gene regulation. The program of study is determined by the individual background and career goals of the student and, when appropriate, may include participation in the education of medical students. Graduate students are supervised through the graduate program in microbiology as well as through graduate programs in biochemistry, biology and physiology and biophysics.

Inquiries regarding graduate level training in Medical Microbiology and Immunology as well as the availability of financial support should be directed to the Chairman of the Department of Medical Microbiology and Immunology.

512	Cellular Physiology	(3)
515	General Cell Biology	(3)

615	Molecular Biology	(3)
707	Contemporary Topics in Immunology	(3)
710	Special Topics in Microbiology	(2)

Metallurgical Engineering and Materials Science

Graduate Faculty: Professors H. Conrad, R. DeAngelis, P. Gillis, P. Reucroft (Director of Graduate Studies), G. Sargent, Associate Professor H. Alan Fine (Acting Chair), 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. The admission requirement is usually a grade point average of 2.8/4.0 on all undergraduate work. 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 Advisory 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.

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)
580	Material Selection and Failure Analysis	(3)
599	Topics in Metallurgical Engineering and Materials Science	(2-3)

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics.

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	(1-12)
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)

Microbiology

Graduate Faculty: Professors M.I.H. Aleem, D. Goldenberg, N.L. Goodman, E. Swim and R.F. Wise-

man (Director of Graduate Studies). Associate Professors R.B. Bridges, A.T. Brown, J.C. Calkins, R.B. Calmes, J.D. Clark, T.C. Gray, D.O. Harris, J.A. Lesnaw, T.T. Lillich, T.L. Roszman, and S. Steiner.

Associate Members: Assistant Professors R. Jacob, T.L. Overman, F.J. Primus, M. Sopori, M. Steiner, and S.G. Zimmer.

Adjunct Professors: D. Mardon (Eastern Kentucky University) and R.B. Otero (Eastern Kentucky University).

Emeritus Professors: Professors O.F. Edwards, J.C. Humphries, I. Ruchman, and M. Scherago.

The graduate program in Microbiology offers the Master of Science (Plans A and B) and the Ph.D. degree in various fields of microbial morphology, physiology and genetics, as well as in several areas of immunology and medical microbiology. Areas of research specialization include bacterial metabolism, cell biology, medical and oral microbiology, bacterial, fungal and viral genetics, tumor immunology, neuroimmunology, immunobiology, molecular and tumor virology, algology, gene regulation and repair, biology of surface and membranes, gnotobiotics, and microbial ecosystems. (Available courses are listed under the Thomas Hunt Morgan School of Biological Sciences).

(See courses in Biology)

Mining Engineering

Graduate Faculty: Professors R.S. Mateer, K.F. Unrug (Director of Graduate Studies), F.D. Wright.

Associate Members: Associate Professor A.B. Szwili

The program leading to the degree of Master of Science in Mining Engineering is offered through the Department of Mining 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. A grade point average of 2.8/4.0 is normally required on all undergraduate work. 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 Mining Engineering.

451G	Physical Properties of Rock	(2)
551	Rock Mechanics	(3)
561	Underground Construction I	(3)
562	Mine Design Project	(3)
563	Surface Mining	(3)
572	Advanced Coal Preparation	(3)
581	Mine Valuation	(3)
599	Topics in Mining Engineering	(2-3)
633	Advanced Underground Coal Mining Systems	(3)
634	Advanced Mine Engineering	(3)
636	Advanced Rock Mechanics	(3)
661	Underground Construction II	(3)
768	Residence Credit for the Master's Degree	(1-12)
771	Seminar in Mining Engineering	(1)
780	Special Problems in Mining Engineering	(1-6)

School of Music

Graduate Faculty: Professors Joseph Baber, Joe Buttram (Chair), Hubert Henderson, Donald Ivey (Director of Graduate Studies), Rey M. Longyear, Wesley K. Morgan, Nathaniel Patch, and Lucien Stark, Associate Professors Richard Domeck.

Associate Members: Assistant Professors Lance Brunner, Charles Lord, and Cecilia Wang and Mina Miller.

Adjunct Professors: Carl-Werner Guempel (UL), Gerhard Herz (UL), Robert Weaver (UL).

Emeritus Professors: R. Bernard Fitzgerald, Gordon Kinney and Kenneth Wright.

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

Placement 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: see general requirements). 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 or 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 or 671 or 672)	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 or 672)	4
Directed Electives	11
Recital	0
Total	30

This degree program is offered in the following areas: piano, voice, organ, violin, viola, cello, flute, oboe, clarinet, trumpet, french horn, trombone, tuba, and conducting.

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 or 672)	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 or 672)	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 671 or 672)	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 reci-

tals 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 advisory 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, 618) ..	3
Minor Outside Department	9
Courses in Area of Specialization	(at least) 15

*This does not apply to DMA students majoring in theory; a total of 15 hours minimum is required, indicated above under "Courses in Area of Specialization."

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 University of Kentucky 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)

Renaissance Notation (MUS 701)

Six hours of graduate level advanced analysis (MUS 671-72)

A minimum of three seminars or special courses (MUS 702 or 718)

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.

JOINT Ph.D. IN MUSICOLOGY University of Kentucky and University of Louisville

A joint Ph.D. in Musicology is available from the University of Kentucky and the University of Louisville. The faculties and facilities of both Universities are available

to students on either campus. If the student is enrolled full-time at either university, courses from the other are available without charge.

Students interested in this program should contact the Associate Dean of the Graduate School, University of Louisville, or the Director of Graduate Studies at the University of Kentucky, School of Music, for further information. The general regulations for doctoral students at the University of Kentucky will apply.

Admission. Every applicant must be admitted to the Graduate Schools of both universities. Official transcripts and GRE scores for students admitted to the University of Louisville will be sent to the Director of Graduate Studies, School of Music, University of Kentucky by the Graduate School, University of Louisville. Applicants may be admitted provisionally on the recommendation of the Director of Graduate Studies in Music at the University of Kentucky pending receipt of GRE scores and/or completion of placement examination at the University of Louisville.

Language Requirements. The University of Louisville will notify the Director of Graduate Studies, University of Kentucky, that a student has completed the language requirements in one of the ways outlined in the University of Kentucky graduate bulletin.

Residence Requirements. At least three regular courses must be taken at the University of Kentucky. Residence requirements may be satisfied at the University of Louisville, University of Kentucky, or a combination of both. A student must be in residence as a full-time student or the equivalent for a minimum of four semesters beyond the master's degree. At least two of these semesters must be consecutive and precede the qualifying examination.

The University of Louisville will notify the Director of Graduate Studies, University of Kentucky, of the intent to schedule the qualifying examination and confirm that the student meets prequalifying requirements. Each candidate for the doctorate must complete two semesters of full-time dissertation study immediately after the qualifying examination by registering for a total of 18 credit hours in MUS 769 (University of Kentucky) or Music History 769 (University of Louisville). The candidate must maintain candidacy by registering for MUS 769 or Music History 769 (zero credit) each semester thereafter until the dissertation is successfully defended.

Advisory Committee. The Advisory

Committee will be composed of six graduate faculty members, three from each institution.

Further information may be obtained from the University of Louisville Graduate School Bulletin.

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.)

	MUP
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
Viola da Gamba	521, 621
Historical Instruments	522, 622
Conducting	558, 658

MUC 570 Advanced Chamber Music Ensemble	(1)
MUC 596 Opera Workshop	(1-3)
570 Advanced Chamber Music Ensemble	(3)
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)
520 Vocal Solo Literature	(3)
521 Organ Literature	(3)
522 Piano Literature to 1830	(3)
523 Piano Literature since 1830	(3)
524 String Literature	(3)
530 Collegium Musicum	(1-3)
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 Repertory	(3)
621 Advanced Vocal Repertory	(3)
622 Symphonic Literature	(3)
623 Opera Literature	(3)
624 Chamber Music Literature	(3)
625 Choral Literature	(3)
650 Music Education Workshop	(1-4)
660 Advanced Music Education Methods and Materials (Subtitle Required)	(2)
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	(1-12)
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 Juanita Fleming (Assistant Dean, Director of Graduate Studies), Jean Hayter, Marion McKenna (Dean), Associate Professor Elizabeth Bear.

Associate Members: Professor Virginia Lane, Associate Professors Melva Jo Hendrix, Beth Hicks, Gretchen LaGonda, Dorothy Luther.

Emeritus Professor: Loretta Denman

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 in Nursing, and Concepts and Theories in Nursing Course. In addition, each student will be expected to pass a final examination and to complete a clinical nursing project, a clinical nursing study 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, or clinical specialization. Currently the clinical concentrations offered include adult nursing, community mental health nursing, family nurse practitioner, gerontologic nursing, nurse midwifery and parent-child nursing.

All students are required to take a minimum of 20 credits in nursing courses including core courses. Increasing opportunity is given students to study the application of core content to a particular clinical field of interest, and to further define the nursing content unique to that field. Faculty have diverse clinical backgrounds which enable this type of exploration to take place. Nursing is studied in a variety of settings: school, community and all types of health agencies. Involvement of the student in the educational program is 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 are expected to take the aptitude portion of the Graduate Record Examination prior to acceptance in the program.

The minimal combined score of 800 on the verbal and quantitative portions of the GRE is acceptable. The minimal grade-point average is 2.5 on a 4.0 grading scale. Graduation from a National League for Nursing accredited baccalaureate degree program, current nurse licensure, one year of experience as a nurse, and post-baccalaureate degree in nursing prior to application deadline are required. Applicants selecting the nurse/mid-wifery concentration are required to have two years of relevant experience in nursing (post-baccalaureate degree in nursing) prior to application deadline.

Enrollment is limited; therefore, all students will be selected on the basis of overall qualification. Eligibility for admission to The Graduate School does not insure admission to the nursing program. Personal interviews must be arranged by the applicant.

For further information contact the Director of Graduate Studies.

543 Gerontologic Nursing	(3)
550 Nursing Perspectives: Current Health Care Problems and Issues	(3)

554	Identification and Management of Common Health Problems	(3)
558	Family Assessment, Health Teaching, and Clinical Counseling in Nursing	(2)
560	Nursing Management of Exceptional Children	(3)
561	Concepts of Nursing Administration	(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 of Nursing	(1-4)
624	Clinical Teaching in Nursing I	(1)
625	Clinical Teaching in Nursing II	(1)
626	Clinical Teaching in Nursing III	(1)
627	Practicum in Nursing Administration	(1-4)
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	(6)
682	Family Nurse Internship	(9)
768	Residence Credit for Master's Degree	(1-12)
770	Seminar in Clinical Nursing I	(2)
771	Seminar in Clinical Nursing II	(2)
772	Seminar in Primary/Ambulatory Care	(2)
774	Seminar in Nursing Research	(2)
780	Seminar in Nurse-Midwifery	(2)
781	Independent Study in Nursing	(1-3)

Nutrition and Food Science

Graduate Faculty: Professors Linda Chen, Abby Marlatt (Director of Graduate Studies), Donald Oberleas, Leonard Packett, Associate Professor Ching Chow and Jose Concon.

Associate Members: Associate Professors Fudeko T. Maruyama, Assistant Professors Ralph Lane, David Newberg, and Janet Noble.

Graduate majors in Nutrition, Food Science and Dietetics lead to the degree of Master of Nutrition Sciences. 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)
680	Nutrition and Aging	(2)

685	Mineral Metabolism	(2)
768	Residence Credit for the Master's Degree	(1-12)
771	Seminar in Nutrition	(2)
781	Special Problems in Foods and Nutrition	(1-3)
784	Special Problems in Institution Management	(1-3)

Operations Research

Director of Graduate Studies: Ray Rishel

The mathematical modeling of social, industrial, and military systems and the selection of preferred alternatives among many possibilities is the subject of "Operations Research" The ever increasing complexity and magnitude of the decision problems confronting modern decision makers demands the availability of a pool of experts capable of providing professional competence in the design, analysis and optimization of large scale systems.

The Master of Science in Operations Research is designed to equip the student with the professional competence necessary for the implementation of operations research techniques in decision problems arising in management, engineering, education, bio-sciences, etc. The curriculum consists of core courses in deterministic optimization, stochastic aspects of operations research including statistical decision making, stochastic processes and stochastic optimization, one course in computer science either in the area of programming language or the area of large data base handling, and one problem seminar designed to integrate the material in the specific topic courses as well as involve the participant in some very specific operations research project.

In addition, the student must select a minor in an application oriented area. This minor consists of a minimum two courses in such departments as economics, business administration, accounting, engineering, agriculture, and biology.

CURRICULUM

Core Courses

Discrete Optimization

- MA 515 Mathematical Programming and Extensions
- MA 616 Numerical Techniques for Nonlinear Optimization
- MA 618 Combinatorics and Networks

Stochastic Models

- STA 524 Probability Theory
- STA 525 Introductory Statistical Inference
- STA 624 Applied Stochastic Processes
- MA 617 Markovian Decision Problems

Computer Science

The student should be well acquainted with computer programming. No student will be allowed to graduate unless he can establish his competence in one pro-

cedural language and in a symbol manipulation language. In addition, the student must complete either a survey course on programming languages (CS 520) or one on information processing (CS 605) depending on the student's background and interest.

- CS 520 Fundamentals of Programming Languages (To be written)
- CS 605 Advanced Information Processing

Problem Seminar

- MA 619 Problem Seminar in Operations Research

Electives must be selected with the approval of the Director of Graduate Studies. There are many course offerings in mathematics, statistics, computer science, economics, electrical engineering, mechanical engineering, civil engineering, business administration, and agricultural economics which are related to specific aspects of operations research. (The completion of deficiencies or prerequisites cannot be counted as credits toward the degree requirement and thus are not considered to be electives.) The student is particularly encouraged to take at least one course from the areas of simulation techniques or business data handling. Two such courses are CS 540, Systems Simulation, and BA 551, Advanced Business Data Processing and Information Systems.

Minor Requirement

The student must select a minor area of specialization with the approval of the director of the program. The minor will consist of a minimum of two courses at the 500 level or above. The goal is to enable the student to converse directly with some of the prospective users of his skills.

Admissions and Degree Requirements

The entering student is expected to have strong working knowledge of linear algebra and to have had some experience with methods of proof used in mathematics. Each entering student, in addition, must have a sufficient background in at least one of the minor areas so that the prerequisites to the courses offered in that area can be met.

The usual Graduate School requirements for admission will be supplemented by a one semester advanced calculus course, a one semester junior-senior level course in linear algebra, and a familiarity with programming a digital computer. Lack of these prerequisites will be considered to be a deficiency which can be made up by taking one of the following courses currently offered:

- Advanced Calculus: MA 471
- Linear Algebra: MA 462
- Programming: CS 150

No elective or other credit will be granted for such make up work.

This program will require 36 credit hours of course work with at least 15 credit hours of this course work at the 600 level or above. In all other respects, the usual Graduate School requirements for distribution and grade point average will apply. The required major for this degree will consist of nine courses to be known as the "core" of the program.

Each student will be required to take a minor consisting of a two course (six credit) sequence. This will generally be in an area of application.

Each candidate for the M.S. degree in Operations Research will be required to pass a written final examination.

Pathology

Graduate Faculty: Professors David Goldenberg, Norman Goodman, Thomas Roszman, Jesse Siskin.

Associate Members: Assistant Professors Donald Pett, James Primus, Stephen Zimmer.

While there is no graduate program in pathology the Department offers several courses which are open to qualified graduate students. The permission of the department chairman is required prior to enrollment.

611	Biopathology	(3)
621	Pathologic Mechanisms	(4)
622	Systemic Pathology	(7)
685	Advanced Immunology	(3)
MD 500	Special Topics Course	(1-3)

Pharmaceutical Sciences

Graduate Faculty: Professors Patrick DeLuca, Louis Diamond, George Digenis, Anwar Hussain, Harry Kostenbauder (Director of Graduate Studies), Charles Lesshaft, Harry Smith, Robert Straus, Joseph Swintosky (Dean). Associate Professors Milton Kornet, William Lubawy.

Associate Members: Assistant Professors Robert Blouin, Joseph Bogardus, P. K. Kadaba, James W. Sieg, John Triplett, James Truelove, Robert Yokel.

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, mechanisms of drug action and drug metabolism.

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.

Pharmaceutical Sciences' graduate students typically enrolled in graduate courses in departments of Chemistry, Statistics, Biochemistry, Pharmacology, and others, depending upon the focus of the student's program. 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.

450G	Pharmacology and Toxicology	(4)
510	Modern Methods in Pharmaceutical Analysis	(5)
530	Practice of Radiopharmacy	(3)
540	Industrial Pharmaceutical Technology	(4)
545	Sterile Parenterals and Devices	(2-3)
595	Independent Problems in Pharmacy Administration	(1-3)
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)
760	Topics in Pharmaceutical Sciences	(2-4)
768	Residence Credit for the Master's Degree	(1-12)
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 Donald F. Diedrich, James W. Fleisher (Director of Graduate Studies), K.C. Huang*, William R. Martin (Chair), Douglas Rees, W.J. Waddell*, Associate Professors Charles Gorodetzky (Adjunct), Donald Jasinski (Adjunct), Ralph E. Miller.

Associate Members: Assistant Professors John Dougherty, Edgar Iwamoto, Mary Vore, Michael Piascik.

Emeritus Professor: H. Gordon

* 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 mechanisms, 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 Pharmaco- and Toxicodynamics	(2)
522	Systems Pharmacology	(3)
541	Biological Assay	(4)
560	Whole-body Autoradiography	(2)
590	Gnotobiotic Methodology	(2)
601	Principles of Medical Pharmacology Lecture	(5)
602	Neuropharmacology	(4)
603	Pharmacology of Organs and Systems	(3)
612	Quantitative Pharmacodynamics. Pharmacokinetics	(2)
616	Advanced Pharmacology	(4)
621	Advanced Pharmacodynamics	(4)
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	(1-12)
769	Residence Credit for Doctor's Degree	(0-12)
770	Seminar in Pharmacology	(1)

Philosophy

Graduate Faculty: Professor Dallas High. Associate Professors Daniel Breazeale, Ronald Bruzina (Chair), James Manns, Thomas Olshewsky, Alan Perreiah and Henry Schankula (Director of Graduate Studies).

Associate Members: Assistant Professors James Force, Don Howard, Janice Moulton.

Emeritus Professor: Jesse de Boer.

The Department of Philosophy offers courses of study leading to both the Master of Arts and the Doctor of Philosophy degrees. The department admits students who wish to terminate their studies at the M.A. level as well as those who wish to continue toward the Ph.D. The Ph.D. program is open to students who have already earned an M.A. in philosophy here or elsewhere.

The Department does not require an undergraduate major in philosophy as a prerequisite to the M.A.; 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.

For either degree a reading knowledge of one foreign language is required.

430G	Professional Ethics	(3)
520	Symbolic Logic	(3)

GROUP A

503	Topics in Ancient Philosophy	(3)
506	Topics in Medieval Philosophy	(3)
509	Topics in History of Modern Philosophy	(3)
513	Nineteenth Century Philosophy	(3)
514	American Philosophy	(3)
515	Contemporary Analytic Philosophy	(3)
516	Contemporary Philosophy: Phenomenological Directions	(3)
517	Existentialism	(3)
518	Representations of Nature	(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)
630	Seminar in Moral Philosophy	(3)
650	Seminar in Metaphysics	(3)
655	Seminar in Theory of Knowledge	(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	(1-12)
790	Research in Philosophy	(3)

Physics and Astronomy

Graduate Faculty: Professors Lewis Cochran, Wendell DeMarcus, Fletcher Gabbard (Chair and Director of Graduate Studies), Richard Hanau, George Hurst (Adjunct), Bernard Kern, Wasley Krogdahl, Guy Lehman, Alan MacKeller, Marcus McEllistram, Clasine Van Winter, Jesse Weil. Associate Professors John Christopher, Frank Clark, Marcel Coz, Moshe Elitzur, Robert Knight, M.G. Payne (Adjunct), Robert Stokes (Adjunct), J.P. Straley.

Associate Members: Assistant Professors F.O. Clark, Peter Eklund, Keith MacAdam, George Pepper, and K.R. Subbaswamy.

Emeritus Professor: Francis Yost.

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 special 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

401G	Special Topics in Physics and Astronomy for Elementary and High School Teachers	(2-4)
402G	Electronic Instrumentation and Measurements	(3)
404G	Mechanics	(3)
416G	Electricity and Magnetism	(3)
417G	Electricity and Magnetism	(3)
472G	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	(3)
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)
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	(1-12)
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	(5)

ASTRONOMY

491G	Galactic Astronomy I	(3)
492G	Galactic Astronomy II	(3)
495G	Elementary Astrophysics I	(3)
496G	Elementary Astrophysics II	(3)
591	Cosmology I	(3)
592	Cosmology II	(3)

Physiology and Biophysics

Graduate Faculty: Professors Louis Boyarsky, N.K. Burki, Eugene Crawford, Joseph Engelberg, Donald Frazier (Chair and Director of Graduate Studies), Ward Griffen, Henry Hirsch, Theodore Kotchen, Jesse Sisken, Miroslava B. Winer, Fred Zechman, James Zolman. Associate Professors Bertram Peretz, David Randall, Daniel Richardson, Gerald I. Roth, P.A. Thornton, David R. Wekstein, James Zolman. Assistant Professor Cobern Ott.

Associate Members: Lu-Yuan Lee, Sandra Legan
Emeritus Professor: James W. Archdeacon.

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, indepen-

dent 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	(1-12)
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, J.W. Hendrix, Joseph Kuc, T. P. Pirone (Chair and Director of Graduate Studies), John G. Shaw, S. J. Sheen, M.R. Siegel, G.W. Stokes, H. Wheeler. Associate Professors Said Ghabrial, Louis Shain.

Associate Member: Assistant Professor Richard S. Ferriss, Associate Professors John R. Hartman, David A. Smith, Richard Stuckey.

Emeritus Professor: Stephen Diachun.

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.

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	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Plant Pathology Seminar	(1)
784	Special Problems in Plant Pathology	(1-3)
794	Research in Plant Pathology	(1-4)

Plant Physiology

Director of Graduate Program: Lowell Bush.

Graduate Faculty: Professors L.P. Bush, G. Cheniaie, 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, Gerald Rosenthal.

Associate Member: Assistant Professors W. S. Cohen, Paul Lin.

Emeritus Professor: William Duncan.

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, photosynthesis, mineral nutrition, membrane ultra-structure, dwarfing mechanisms, the mechanism of action and metabolic fate of 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 Biochemis-

try, 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 (BIO) Plant Physiology	(3-5)
630 (AGR, BIO) Experimental Techniques in Plant Physiology	(3)
660 (PPA) Physiology of Plant Disease	(3)
701 (BIO) Plant Metabolism	(3)
732 (AGR, BIO, HOR) Mineral Nutrition of Plants	(3)
734 (AGR, BIO, 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 Michael Baer, Bradley Canon, Vincent Davis, Malcolm Jewell, W.E. Lyons (Director of Graduate Studies), Sidney Ulmer, Kenneth Vanlandingham, Associate Professors Kenneth Coleman, Maurice East, George Gadbois, Karen Mingst, Daniel Nelson, Herbert Reid, Phillip Roeder, Lee Sigelman (Chair), and Ernest Yanarella.

Associate Members: Assistant Professors William Berry, Pamela Johnson Conover, Donald Gross, Thomas Likens, and David Lowery.

Emeritus Professor: Amry Vandenbosch.

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 semesters 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 the 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 three 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 advisory committee. The students take advanced work in at least three substantive fields in political science and at least nine semester hours of course work in another discipline. The qualifying examination in political science consists of a written and oral examination in each of the three substantive fields specified in the student's program. The examination is given by the Advisory Committee. Following this examination the students write a prospectus for the dissertation and are examined orally on this by the Advisory 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.

411G Comparative Government-Parliamentary Democracies I	(3)
412G Comparative Government-Parliamentary Democracies II	(3)
417G Survey of Sub-Saharan Politics	(3)
419G The Governments and Politics of Eastern Asia	(3)
420G Governments and Politics of South Asia	(3)
421G Governments and Politics of Southeast Asia	(3)
428G Latin American Government and Politics	(3)

429G Government and Politics of the Soviet Union	(3)
430G The Conduct of American Foreign Relations	(3)
431G National Security Policy	(3)
436G International Organization	(3)
437G Dynamics of International Law	(3)
439G Contemporary International Problems	(3)
441G Early Political Theory	(3)
442G Modern Political Theory	(3)
450G Rural Local Government	(3)
452G Municipal Government	(3)
456G Appalachia Politics	(3)
461G Civil Liberties	(3)
463G The American Judicial Process	(3)
465G Constitutional Politics	(3)
470G American Political Parties	(3)
473G Public Opinion	(3)
476G Legislative Process	(3)
487G Introduction to Public Administration	(3)
489G The Analysis of Public Policy	(3)
515 Comparative Political Parties	(3)
525 Comparative Study of Political Violence	(3)
532 Comparative Foreign Policies	(3)
538 Latin American Relations	(3)
539 The Foreign Policy of the Soviet Union	(3)
545 American Political Thought	(3)
547 Micro-Theory in Political Science	(3)
549 Science, Technology and Political Theory	(3)
553 Urban Government and Politics	(3)
554 Politics of Land Use and Growth Management	(3)
555 Intergovernmental Relations in the American Federal System	(3)
557 Kentucky Government and Politics	(3)
571 Interest Groups	(3)
572 Political Campaign Strategy and Techniques	(3)
580 The Budgetary Process	(3)
584 The American Presidency and the Federal Executive	(3)
588 Public Personnel Administration	(3)
610 Comparative Politics: Theory and Method	(3)
611 Ethical Issues in Political Life	(3)
612 Polling and Survey Research	(3)
613 State Legislatures	(3)
614 Political Parties and Elections in America	(3)
630 Proseminar in Non-Institutional Political Behavior	(3)
654 Proseminar in Judicial Process	(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 20th Century	(3)
711 Current Research in Political Science	(3)
737 Transnational Organizations and Processes	(3)
751 Seminar in Metropolitcs	(3)
752 Problems in State and Local Government	(3)
757 Seminar in Comparative Democratic Political Systems	(3)
758 Seminar in Soviet Politics, Government, and Foreign Policy	(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	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
770	Seminar in Contemporary Political Theory	(3)
772	Advanced Problems in Research Methods	(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)
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), Ronald Dillehay, Jesse Harris (Chair), Leonard Worell. Associate Professors Edward Engel, Donald McCoy, Michael Nietzel, Arthur J. Nonneman, James Spivey, and Thomas Zentall.

Associate Members: Professor Billie Ables. Associate Professor James Norton. Assistant Professors Susan Belmore, Susan Burchfield, Sandra Candy, Stuart Fisher, Michael Hubbard, Carol Lowery, Caryl Rusbult.

Joint Appointments: Professor John Haley. Associate Professors Jeffrey Brandsma, William Drew, Russell Jones, James Zolman.

Emeritus Professors: James Calvin, Betsy Worth Estes, Edward Newbury, Frank Pattie.

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 learning-physiological program provides a combination of formal course work and individualized training designed to produce research oriented psychologists who are capable of continuing productive scholarship and teaching in their chosen

areas of interest. Emphasis is placed on theoretical treatments and empirical studies of fundamental learning processes and on the neurophysiological bases of behavioral change. Current research within the program includes operant, classical, and instrumental conditioning in several species, motivation, memory, animal intelligence, psychopharmacology, developmental psychobiology, and recovery from brain damage.

The program in Cognitive Studies attempts to prepare students for a career in teaching and research with a concentration in the fields of perception and cognition especially from a developmental point of view. The program has a strong theoretical emphasis within the framework of cognitive-developmental theory. Training combines formal proseminar and seminar learning experience with supervised research and teaching experience. A wide range of facilities and research opportunities exists within the department and adjunct facilities.

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 program, 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 concern-

ing the program in psychology and such matters as financial support, contact the Chairman, Department of Psychology.

423G	Processes of Psychological Development	(3)
444G	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)
528	Dimensions of Aging	(3)
529	Psycholinguistics	(3)
532	Personality	(3)
533	Abnormal Psychology	(3)
535	Psychological Testing	(3)
539	Interpersonal Dynamics	(3)
545	Small Group Behavior	(3)
547	Experimental Social Psychology	(4)
548	Applied 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)
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 Cognitive Processes	(2)
629	Introduction to Clinical Psychology	(1)
630	Clinical Methodology I	(2)
631	Practicum in Clinical Methodology I	(2)
632	Clinical Methodology II	(2)
633	Practicum in Clinical Methodology II	(2)
634	Practicum in Clinical Psychology III	(3)
636	Systems of Psychotherapy	(3)
637	Practicum in Psychotherapy and Behavior Change	(1-3)
638	Clinical Child Psychology	(3)
641	Psychological Measuring Instruments	(3)
644	Methods of Social Psychological Inquiry	(3)
647	Disorders of Language	(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	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
772	Seminar in Learning	(3)
774	Seminar in Verbal Behavior	(3)
775	Advanced Seminar in Perception	(3)
776	Seminar in Animal Motivation	(3)
778	Seminar in Developmental Psychology	(3)
779	Seminar in Social Psychology	(3)
780	Problems in Psychology	(1-3)
781	Research Participation	(1)
790	Research in Psychology	(3)
MD 500	Special Topics Course	(1-3)

Public Administration

Graduate Faculty: Professors Michael Baer, Donald L. Hochstrasser, William E. Lyons. Associate Professors Philip K. Berger, Andrew J. Grimes, Merlin M. Hackbart (Director and Director of Graduate Studies), Phillip W. Roeder, Lee Philip Sigelman, and Vernon R. Wiehe. Assistant Professors William D. Berry, Glenn C. Blomquist, David L. Lowery, and H. Brinton Milward.

The Master of Public Administration program is administered by the James W. Martin Graduate Center for Public Administration, an interdisciplinary academic unit of The Graduate School of the University of Kentucky. The Center is headed by a Director and staffed by research and teaching faculty with joint appointments in various other University units, including the Departments of Political Science, Economics, Business Administration, and Community Medicine, and the Colleges of Social Professions and Education.

The MPA Program enables persons seeking careers in public agencies to acquire the multidisciplinary, professional and practical education appropriate to their goals. The program of study reflects the conviction that administrative processes in the public and private sector are related, but different. A special effort is made to accommodate in-service, career professionals.

The University of Kentucky's MPA Program has been found to be in substantial conformity with the standards for the profession as articulated by the National Association of Schools of Public Affairs and Administration (NASPAA) in 1980.

The MPA Program is designed to provide:

1. an Administrative Core of 24 semester hours which covers the areas of economics, finance, accounting control, management, research methods, public policy formulation and the political and legal environments of public administration; and,

2. an Area of Concentration of 21 semester hours, divided into a six-hour internship and 15 hours of course work in one of five areas of specialization: Health Administration; Higher Education Administration; Human Services Administration; General Government Administration; or Urban and Regional Development Administration.

Students take a final comprehensive examination over the Administrative Core and their Area of Concentration course work. There are no thesis or language requirements. A limited number of research assistantships and fellowships are available for students with high academic standings.

For more information, please write MPA Coordinator, 409 Commerce Bldg., University of Kentucky, Lexington, KY 40506.

Entrance Requirements

The MPA Program conforms with the general rules and regulations of The Graduate School. Students applying for admission to the program are expected to have an undergraduate grade point average of 2.5 or better; quantitative and verbal scores on the GRE or GMAT of at least the 50th percentile; and a GPA of at least a 3.0 on all graduate work previously attempted.

Course Requirements

Completion of a minimum of 45 semester hours of graduate work is required.

- A. Administrative Core (24 semester hours)
 - PA 621 Analysis of Organizations: Decision Science Methods (4)
 - PA 622 Analysis of Organizations: Financial Control Methods (4)
 - PA 623 Analysis of Organizations: Behavioral Science Methods (5)
 - PA 626 Administration of Public Organizations (3)
 - PA 627 The Fiscal Setting of Public Organizations (3)
 - PA 628 Legal and Political Environment of Public Organizations (3)
 - PA 629 Public Policy Formulation and Social Planning (3)
 - PA 633 Application of Behavioral Science Methods (1)
- B. Area of Concentration (21 semester hours) in one of the following areas:
 - Governmental Administration: PS 476G, PS 553, PS 554, PS 555, PS 571, PS 580, PS 584, PS 588, PS 711, PS 751, PS 752, PS 790, PS 795.
 - Health Administration: CM 601, CM 611, CM 621, CM 622, CM 631, CM 775, CM 785.
 - Higher Education Administration: EDH 718, EDH 719, EDH 733, EDH 734,

EDH 798, EDH 722.

Human Services Administration: HSA 602, HSA 604, HSA 606, HSA 607.

Urban and Regional Development Administration: ECO 483, ECO 682, ECO 683, GEO 540, GEO 541, PS 553, PS 751, SOC 615, SOC 620.

Area of Concentration course work . . . (9)
PA 711 Internship in Public Administration (6)

Related Electives

- PA 721 Public Planning (3)
- PA 722 Policy Seminar (3)
- PA 795 Special Topics in Public Administration (3)
- PA 796 Independent Study in Public Administration (3)

621	Analysis of Organizations: Decision Science Methods	(4)
622	Analysis of Organizations: Financial Control Methods	(4)
623	Analysis of Organizations: Behavioral Science Methods	(3)
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)
633	Application of Behavioral Science Methods	(1)
711	Internship in Public Administration	(6)
721	Public Planning	(3)
722	Field Seminar in Policy Research	(3)
795	Special Topics in Public Administration	(1-3)
796	Independent Study in Public Administration	(1-3)

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.

- 472G 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)
- MD 500 Special Topics Course (1-3)

Rehabilitation Counseling

Graduate Faculty: Associate Professors D. Auvenshine.

Associate Member: Assistant Professor Barbara Witten.

The Graduate Program in Rehabilitation Counseling is an interdisciplinary program within The Graduate School of the University of Kentucky. The curriculum, in accordance with the guidelines of professional organizations in rehabilitation counseling, provides for flexible programming in response to individual student needs and interest. The curriculum is nationally accredited by the Council on Rehabilitation Education and fulfills the Kentucky certification requirements in rehabilitation counseling.

Course work and field work total a minimum of 45 credit hours if the student has a bachelor's degree in rehabilitation and relevant work experience. The typical program for other students would be 54 hours, up to a maximum of 60 hours. At least 36 credit hours must be taken at the University of Kentucky.

The curriculum is composed of four levels of courses: prerequisites, basic core, advanced core, and electives.

Prerequisites

It is assumed that most students entering the master's program will have a background in psychology, rehabilitation, or other social-behavioral sciences. The following courses or their equivalent must be taken prior to, or during the program:

- EDP 600 Human Development and Behavior
- EDS 600 Introduction to Exceptional Children
- EDP 605 Introduction to Counseling
- RC 510 Orientation to Rehabilitation Resources

These courses may be counted toward degree requirements as **electives**.

Basic Core

The Basic Core courses or their equivalent are required for students with minimal exposure to the field of rehabilitation:

- RC 520 Principles of Rehabilitation Counseling
- RC 530 Psycho-social Impact of Disability
A medical information course
- EDP 652 Theories of Counseling
A career counseling/development course

Advanced Core

Advanced Core courses are required for all students enrolled in the degree program:

- RC 620 Vocational Evaluation/Work Adjustment of the Severely Disabled
- RC 610 Case Management Techniques in Rehabilitation Counseling
- RC 630 Placement Services and Techniques for the Severely Disabled
- RC 710 Practicum
- RC 720 Internship
- RC 740 Administration and Supervision in Rehabilitation
- RC 750 Rehabilitation Research
- RC 760 Current Issues in Rehabilitation Counseling
A research methodology course

Students who have taken any of the above courses or their equivalent will consult with faculty to waive the required course and substitute an approved elective. Practicum and Internship requirements will not be waived.

Other Rehabilitation Courses

- RC 770 Special Topics in Rehabilitation Counseling
- RC 782 Directed Independent Study

Electives

Electives will be chosen by the student in conjunction with faculty advising. Students are encouraged to use their electives to develop "support areas." Support area is defined as a group of three or more courses, focusing on one theme, to enhance specific skills or knowledge related to rehabilitation.

Courses comprising a support area may be offered by one or more departments. Examples of support areas are: gerontology, mental illness, educational services for the handicapped, administration and management, family dynamics, research and evaluation, counseling, policy and planning, economics and labor trends, criminal justice, deafness/hearing impairment, blindness/visual impairment and developmental disabilities.

Field Work

The first field work component is a three credit Practicum, which consists of 180 clock hours of supervised experience in a

rehabilitation or rehabilitation-related setting, a weekly seminar, and individual supervision. Admission to candidacy will be considered after a student has completed Practicum. The decision to admit to candidacy includes demonstrated skill in academic areas and a judgment by the faculty that the student possesses the personal and social characteristics necessary for providing professional rehabilitation counseling services.

In accordance with the national accreditation requirements, students must then complete 600 clock hours of supervised Internship in a rehabilitation or rehabilitation-related setting. Every student registered for Internship will also participate in a weekly seminar and supervision. Internship is three credits per 200 clock hours, and may be taken in the summer, fall, or spring semesters following Practicum. The Internship may be taken in one semester, or may be split into two semester.

Students must successfully complete their Internship, and demonstrate competence in working with disabled individuals in the context of a professional rehabilitation counseling relationship.

- 510 Orientation to Rehabilitation Resources . . . (3)
 - 520 Principles of Rehabilitation Counseling . . . (3)
 - 530 Psycho-Social Impact of Disability (3)
 - 610 Case Management in Rehabilitation Counseling (3)
 - 620 Vocational Evaluation and Work Adjustment for the Severely Handicapped (1-2)
 - 630 Placement Services and Techniques in Rehabilitation Counseling (1-2)
 - 710 Practicum in Rehabilitation Counseling . . . (3)
 - 720 Internship in Rehabilitation Counseling (3, 6, 9)
 - 740 Administration and Supervision in Rehabilitation Counseling (3)
 - 750 Rehabilitation Research (1-3)
 - 760 Current Issues in Rehabilitation (1-3)
 - 770 Special Topics in Rehabilitation (1-3)
 - 782 Directed Independent Study (1-3)
- CDS**
- 550 Research Methodology and Instrumentation (2)
 - 611 Child Growth and Development, Part I (2)
 - 612 Child Growth and Development, Part II (2)
 - 631 Principles of Dental Occlusion (2)

Slavic and Oriental Languages and Literatures

Graduate Faculty: Professor Leon Zolondek. Associate Professors Paul Forand (Chairman), Roger B. Anderson.

At present no graduate program is offered in Slavic and Oriental Languages and Literatures.

OTHER DEPARTMENTAL OFFERINGS

- 444G The Writings of the Muslim Mystics . . . (3)

450G	Dostoevsky (in English)	(3)
455G	Spanish Islam	(3)
457G	Modern Arabic Literature in Translation	(3)
458G	Modern Hebrew Literature	(3)
460G	Tolstoy (in English)	(3)
462G	Advanced Reading in the Sciences and Technology (in Russian)	(3)

Social and Philosophical Studies in Education

Graduate Faculty: Professors David Denton (Chair), Richard Warren (Director of Graduate Studies), Associate Professors Clint Collins, Willis Griffin, Richard LaBrecque.

Associate Members: Associate Professors Alan DeYoung, Richard Angelo.

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 pro-

gram 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)
601	Proseminar	(1)
610	Futuristics and Education	(3)
640	Philosophy of Education	(3)
643	Values, Moral Education and Schooling	(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)
654	Multi-Cultural and International 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)
750	Problems in Sociology of Education	(3)
768	Residence Credit for the Master's Degree	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)
773	Seminar in Foundations of Education	(1-3)
778	Seminar in History of Education in Kentucky	(3)
785	Independent Study in Social and Philosophical Problems in Education	(3)

Social Work

Graduate Faculty: Professors S. Zafar Hasan (Dean), Constance P. Wilson (Director of Graduate Studies), Ronda S. Connaway, Associate Professor Kennard W. Wellons.

Associate Members: Professor Dorothy A. Miller, Associate Professors Richard K. Brautigam, Martha E. Gentry, Paul Kim, Elizabeth Kirlin, John Landon, Assistant Professors Vernon R. Wiehe.

Emeritus Professors: Professors Harold E. Wetzel, Ernest F. Witte.

The College of Social Work publishes a bulletin explaining the total program. Please write College of Social Work, Patterson Office Tower, University of Kentucky.

The College of Social Work 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 Work 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 Work. The remaining 10 credits may be elected from relevant courses offered throughout the University or by the College of Social Work.

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. The MSW degree requires 54 credit hours, at least 28 of which must be taken at the University of Kentucky. Advanced standing of up to one year or 26 credit hours may be granted for work completed at 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 Work advancement-to-candidacy review.
4. Successfully complete the final comprehensive examination. This exam-

ination 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 is accredited by the Council on Social Work Education.

Full-time students are admitted to the M.S.W. degree program primarily in the fall semester. Applications for admission to the M.S.W. program should be filed on prescribed forms both with the College of Social Work and The Graduate School.

401G Social Welfare Policy: Theory and Implementation	(3)
411G Perspectives on Human Behavior and the Social Environment	(3)
420G Interventive Methods in Social Work	(4)
500 Public Welfare Administration	(3)
505 Child Welfare Services	(2-3)
510 Mental Health Knowledge for the Social Professions	(2-3)
512 Medical Knowledge for the Social Professions	(3)
523 Social Perspectives on Racism and Ethnic Prejudices in America	(2-3)
541 Administration and Supervision in the Social Professions	(3)
551 Public Assistance Programs	(3)
560 Social Work Practice in Juvenile Justice	(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)
610 Social Services in Black Communities	(3)
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	(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	(5 or 10)
642 Psychological Aspects of Human Aging	(2)
650 Research Practicum	(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)
703 Methods in Social Work Education	(3)
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	(4 or 8)
745 Advanced Specialized Educational Practicum	(2-4)
750 Seminar on Evaluative Research for the Social Professions	(2)
760 Pro-seminar in Selected Service Areas	(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, Richard Clayton, C.M. Coughenour, Thomas Ford, Eugene Gallagher, William Kenkel, Jon Shepard, John Stephenson (Director of Graduate Studies), Robert Straus, Willis Sutton (Chair), Harwin Voss, George Wilber. Associate Professors Walter Abbott, Lawrence Busch, James Christenson, Billie DeWalt, Thomas Garrity, Jon Hendricks, James Hougland, Philip Moody, Gerald Slatin.

Associate Members: Associate Professors Michael Brooks, Kenneth Pigg, Paul Warner. Assistant Professors Dwight Billings, Janet Bokemeier, Alan DeYoung, Lori Garkovich, Robert Goldmen, William Lacy, Charles Perry, Sandra Tausend, Ann Tickamyer, William Turner.

Emeritus Professors: Howard Beers, A. Lee Coleman, James W. Gladden, Grant Youmans.

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, social gerontology and Appalachian Studies. 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.

444G Social Psychology	(3)
493G Social and Cultural Determinants of Economic Growth and Development	(3)
501 Population Analysis	(3)
502 Methods of Demographic Analysis	(3)
503 Social Classes	(3)
509 The U.S. Family in Historical Perspective	(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)
527 Society and Health	(3)
528 Dimensions of Aging	(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)
545	Small Group Behavior	(3)
546	Social Factors in Mental Health	(3)
548	Applied Social Psychology	(3)
549	Sociological Aspects of Mass Communication	(3)
551	Concepts and Theories in Sociology	(3)
561	Comparative Sociology	(3)
565	Special Problems in Sociology	(1-3)
571	Contemporary Sociology	(3)
581	Techniques of Social Investigation	(3)
600	Proseminar in Community	(3)
610	Proseminar in Complex Organization	(3)
620	Sociology of Community Development	(3)
625	Sociology of Religion	(3)
630	Proseminar in Deviant Behavior	(3)
632	Seminar in Race and Ethnic Relations	(3)
650	Proseminar in Social Change and Development	(3)
651	Systematic Sociology	(3)
653	Family Theory and Dynamics	(3)
660	Proseminar in Social Demography	(3)
661	Sociology of Education	(3)
670	Seminar on Role Theory	(3)
679	Proseminar in Social Interaction and Social Psychology	(3)
681	Research Design and Analysis	(3)
685	Integration of Theory and Research	(3)
695	Social Ecology	(3)
700	Special Topics in Community	(1-3)
710	Special Topics in Social Organization	(1-3)
727	Seminar on Socio-Cultural Change	(3)
730	Special Topics in Deviant Behavior	(1-3)
731	Seminar in Comparative Social Organization	(3)
738	Seminar: Drug Use as Deviant Behavior	(3)
750	Special Topics in Social Change and Development	(1-3)
751	Seminar in Sociological Theory	(3)
760	Special Topics in Social Demography and Ecology	(1-3)
766	Concepts in Medical Sociology	(3)
768	Residence Credit for the Master's Degree	(1-12)
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, R. I. Barnhisel, R.L. Blevins, A.J. Hiatt (Director of Graduate Studies), H.F. Massey, D.E. Peaslee, R.E. Phillips, J.L. Ragland, J.L. Sims, G.W. Thomas. Associate Professors George Coltharp.

Associate Member: Assistant Professors Scott Smith, Robert Wittwer.

The Soil Science graduate program offers graduate work leading to the Master of Science, Master of Science in Agriculture, 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.

468G	Soil Use and Management	(3)
470G	Fertilizers and Soil Fertility	(3)
473G	Soil Morphology and Mapping	(3)
501	Reclamation of Disturbed Land	(3)
560	Soil-Plant Relationship	(3)
562	Forest Soils	(3)
566	Soil Biology	(3)
575	Soil Physics	(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)
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	(1-12)
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 Brian Dendle (Director of Graduate Studies), Joseph Jones, Margaret Jones, John Keller, John Lihani, William McCrary, Daniel Reedy (Chair), Gerardo Saenz. Associate Professors Michael Impey and Edward Stanton.

Emeritus Professor: Alberta Wilson Server.

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). 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 written and oral examinations is required for qualification for candidacy for the doctorate (see remarks below); presentation of acceptable dissertation. All candidates for the doctorate are asked to declare an area of special competence, either generic or periodic. It is assumed that the candidates' record will reflect more course work in this area.

Doctoral candidates may choose to organize their special studies either by traditional area-divisions or by genre.

Organization by area: (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.

Generic specialization: (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.

The qualifying examinations consist of three written eight-hour examinations (two on all aspects of Hispanic Language, Literature, and Culture, and one on the area of special competence and related material) and a two-hour oral examination.

SPANISH

407G	Literature of Social Protest in Spanish America	(3)
420G	Twentieth Century Spanish American Literature in Translation	(3)
422G	Cervantes in Translation	(3)
423G	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 Centuries	(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	(1-12)
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

461G	Rumanian I	(3)
462G	Rumanian II	(3)

Special Education

Graduate Faculty: Professors Edward Blackhurst (Director of Graduate Studies), Associate Professors Patricia Cegelka, Richard Culatta, M.C. Martinson, Catherine Morsink, C.M. Nelson (Acting Chair).

Associate Members: Associate Professor Donald Cross. Assistant Professors William Berdine, Barbara Culatta, James Dworkin, David Gast and George Sugai.

Students may enroll for either degree or certification graduate programs in special education. Programs not leading to a degree are designed primarily for those who are seeking Kentucky Provisional, Rank II or Rank I Teacher Certification at the graduate level in the following certification areas:

1. Learning and Behavior Disorders
2. Speech Pathology
3. Trainable Mentally Handicapped

4. Retarded/Multiple Handicapped
5. Supervision of Special Education

Previously certified special education teachers may pursue the standard teaching certificate by selecting an area of emphasis in one of the following:

- Early Childhood Education for the Handicapped
- Retarded/Multiple Handicapped
- Career Education for the Handicapped
- Speech Pathology
- Special Education Resource Teaching (Mildly Handicapped)
- Severe Learning and Behavior Disorders
- Trainable Mentally Handicapped

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.

To be admitted to candidacy for a Master's degree, the following criteria must be met:

1. Grade-point average of 3.0 on at least 12 semester hours of course work, six of which must be at the 600 level or above, excluding practicum.
2. Recommendation by at least one member of the Graduate Faculty.
3. A completed program plan.
4. No incomplete grades.
5. Successful performance on an objective test covering basic concepts in special education or a grade of B on a Graduate level survey of special education course.

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

*The Master of Science in Education option in Severely Retarded/Multiply Handicapped requires a minimum of 54 credits.

At least 15 semester hours must be earned in courses at the 600-700 level (excluding practica) and a comprehensive final examination is required.) All students are also required to take one course in either statistics, methodology of educational research, or single subject research design. With the exception of speech pathology students, either a research paper or thesis is required of all Master's degree students.

Students entering without a teaching certificate must meet deficiencies, including certification requirements, as outlined by their adviser, in addition to completing the degree requirements listed above. Depending on 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 Education 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.

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	(2)
520 Survey of Severe Developmental Disabilities	(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)
585 Sociolinguistics	(3)
586 Clinical Interviewing	(3)
587 Audiometry	(3)
588 Disorders of Articulation	(3)
589 Cleft Palate	(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)
616 Vocational Programming for Handicapped Youth and Adults	(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)
630 Methods for Teaching the Severely Handicapped	(3)
631 Basic Skill Training for the Severely Handicapped	(3)
632 Advanced Practicum in Severe Developmental Disabilities	(1-12)
633 Single Subject Research Designs in Special Education	(3)
647 Language Disorders II	(3)
655 Screening Procedures in Speech and Hearing	(1)
656 Clinical Laboratory in Diagnostic Procedures for Speech and Language	(1)
657 Clinical Laboratory in Speech and Language	(1-4)
658 Clinical Laboratory in Audiology	(1)
659 Clinical Externship in Speech Pathology ..	(12)
670 Disorders of Phonation	(3)
671 Education of Emotionally Disturbed Children	(3)
673 Neurogenic Disorders of Speech and Language	(4)
674 Disorders of Fluency	(3)
702 Seminar in Speech Pathology (Variable Topic)	(1-3)
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	(2)
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	(1-12)
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 Vasant Bhapkar, Joseph Gani (Chair), Zakkula Govindarajulu, Harlley McKean.

Associate Professors: David Allen, Peter Purdue (Director of Graduate Studies).

Associate Members: Assistant Professors William Griffith and Constance Wood.

Joint Appointments: Professor Richard Anderson, Associate Professors Paul Cornelius, Harry Hall

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 depart-

mental 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 advisory committee. Within six months after passing the qualifying examination, the student presents a prospectus of the dissertation to the advisory 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.

417G	Principles of Operations Research II	(3)
422G	Basic Statistical Theory II	(3)
424G	Basic Probability and Distribution Theory	(3)
482G	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)
570	Basic Statistical Analysis	(4)
601	Theory of Statistical Inference II	(3)
603	Introduction to Linear Models and Experimental Design	(4)
612	Sequential Analysis	(3)
616	Design and Analysis of Sample Surveys	(3)
619	Problems Seminar in Operations Research	(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	(3)
665	Analysis of Categorical Data	(3)
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)
762	Multivariate Analysis II	(3)
768	Residence Credit for the Master's Degree	(1-12)
769	Residence Credit for the Doctor's Degree	(0-12)

Theatre Arts

Graduate Faculty: Professors James W. Rodgers (Chair and Director of Graduate Studies), and J. Robert Willis

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 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.

516	Playwriting	(3)
530	Theatre Directing II	(3)
574	Scenography II	(3)
580	History of the Theatre I	(3)
581	History of the Theatre II	(3)
588	Contemporary Theatre	(3)
589	History of Theatre in the United States	(3)
590	Production Practicum	(1)
591	Performance Practicum	(1)
596	Summer Repertory Theatre	(1-6)
625	Advanced Styles of Acting	(3)
660	Studies in Technical Theatre: Production	(3)
661	Studies in Technical Theatre: Lighting	(3)
692	Studies in Directing	(1-3)
730	Directing	(3)
770	Seminar in Theatre	(3)
780	Independent Study in Theatre	(3)

Toxicology

Graduate Faculty: Professors Charles Ambrose, Wesley Birge, Layton Davis, Louis Diamond, Wyman

Dorough (Director of Graduate Studies), James Flesher, Laurence Hurley, Gerald Rosenthal, Pritam Sabharwal, Malcolm Siegel, Thomas Tobin, Ralph Wiseman, Associate Professors Jerry Blake, John Calkins, Douglas Dahlman, Steadman Harrison, Jr., William Lubawy, Assistant Professors Ralph Christensen, Mary Vore, S.Y. Yeh.

Associate Members: Assistant Professors John Dougherty, Peter Oeltgen, Robert Yokel.

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.

The Graduate Program in Toxicology is administered by the Graduate Center for Toxicology, headed by a director and staffed by faculty with primary appointments either in the Center or in various departments of the Medical Center, the College of Agriculture and the School of Biological Sciences. Both the M.S. (Plan A) and Ph.D. degrees are offered.

While an interdisciplinary program located administratively in The Graduate School, great care is taken to assure that graduate students receive training that qualifies them as competent toxicologists rather than as specialists in only one or two of the many areas which are integral parts of toxicology. However, competencies in special sub-disciplines of toxicology are expected of all students and are developed through independent study, course offerings and, most important, by conducting research under the direction of the toxicology faculty.

Applicants should have strong undergraduate preparation in chemistry, biology and mathematics. Preferably, all applicants will be graduates of accredited colleges with an appropriate baccalaureate degree (e.g. chemistry, biological sciences, etc.), hold a minimum grade-point average of 3.0 on a 4.0 scale, and have a combined Graduate Record Examination score (verbal plus quantitative) of at least 1100. Applicants with lesser qualifications normally will be accepted only if personally recommended by a member of the toxicology faculty who is willing to serve as the student's research adviser.

Eligibility for admission to The Graduate School does not insure admission to the toxicology program. Each applicant is considered individually and acceptance

into the program depends a great deal on the interest of the applicant and the program's ability to provide training within that particular area of interest. Students with interests beyond the training capabilities of the program are not encouraged to enter the program even if exceptionally qualified academically.

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.

521	General Pharmacology and Toxicodynamics	(2)
606	Insecticide Chemistry and Toxicology	(3)
640	Detoxification Mechanisms	(3)
650	Cellular and Histotoxicology	(2)
672	Behavioral Pharmacology and Toxicology	(2)
680	Toxicology	(5)
690	Practical Analytical Toxicology	(3)
768	Residence Credit for the Master's Degree	(1-12)
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 (Chair), R.W. Darlington (Director of Graduate Studies), J.H. Drudge, E.T. Lyons, W.H. McCollum, T. W. Swerczek and Thomas Tobin, Associate Professor R.G. Loy.

Associate Members: Associate Professor J. W. Blake, Assistant Professors Ernest Bailey and Robert Douglass.

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)
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- 690 Practicum Analytical Toxicology (3)
- 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)
- 775 Reproductive Physiology Seminar (1)
- 781 Correlative Pathology (1-3)
- 783 Infectious Diseases of Domestic Animals . . (3)
- 785 Advanced Veterinary Parasitology (3)
- 786 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 Herbert Bruce (Chair), Charles Byers, Clayton Omvig (Director of Graduate Studies), Associate Professors (Director of Graduate Studies), David McMurtry, Elaine Uthe.

Associate Members: Professors Bernard Fagan, Leonard McDowell, Associate Professors Jack McElroy, Rodney Tulloch, Assistant Professors Carolyn Litchfield, Kawanna Simpson, Ann R. Willett.

Emeritus Professor: Harold Binkley, Carl Lamar, Vernon Musselman.

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 qual-

ifies 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 557.
- 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

- I. 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)
- II. 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 6
 - EDV 693 Supervision in Vocational Education 3
- III. Program Planning, Research, and Evaluation in Vocational Education
 - EDV 529 Evaluation in Industrial and Distributive Education 2
 - EDP 656 Methodology in Educational Research 3
 - EDP 660 Research Design and Analysis in Education 3
- IV. 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

For information about the certification program, contact the Director of Graduate Studies.

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)
679	Adult Education in Agriculture	(3)
680	Directing Occupational Experience in Agriculture	(3)
681	Teaching Farm Shop	(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)
640	Advanced Methods in the Secretarial Subjects	(3)

BUSINESS AND OFFICE EDUCATION

(BOE is the abbreviation for these courses.)

519	Records Management	(3)
556	Business Reports and Communications	(3)

HOME ECONOMICS EDUCATION

EDC 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)
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 (1-12)
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)
528	Technique of Teaching Distributive Education	(2-3)

INDUSTRIAL EDUCATION

518	Methods in Industrial Education	(2)
529	Evaluation in Industrial and Distributive Education	(2)
536	Surveys in Industrial Education	(2)
537	Special Problems in Industrial Education	(1-3)
540	Supervision of Student Teaching in Industrial Education	(2)

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