

Graduate
School
Bulletin
1973-74

UNIVERSITY OF KENTUCKY

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UNIVERSITY OF KENTUCKY

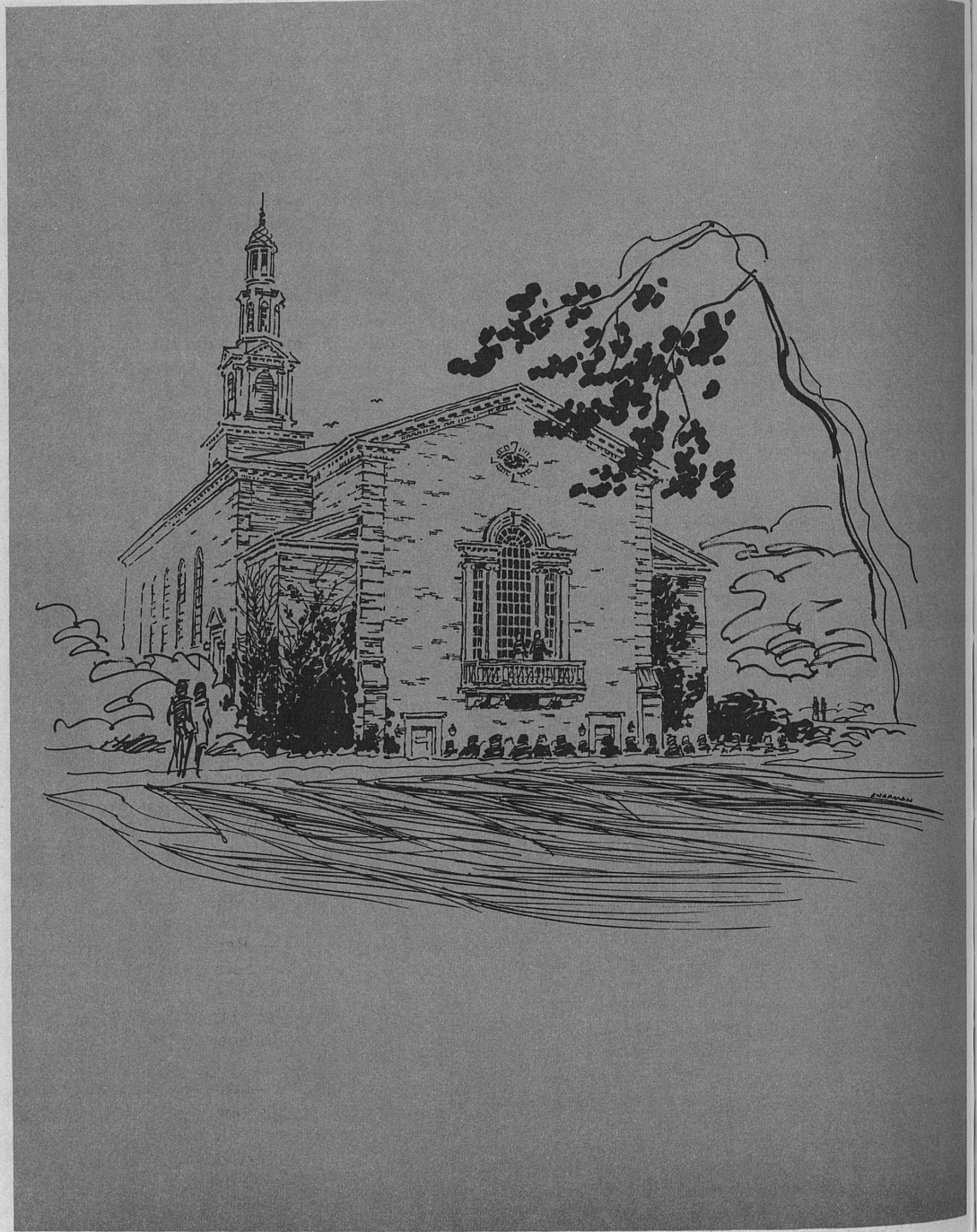
Graduate School Bulletin 1973-74

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CALENDAR

1973 Fall Semester

- July 27—Friday—Last date to submit all required documents to Graduate Admissions Office for admission and readmission to the 1973 Fall Semester
- August 27, 28—Monday and Tuesday—Classification, registration, and drop add
- August 29—Wednesday—Class work begins
- September 3—Monday—Labor Day (Academic Holiday)
- September 4—Tuesday—Last day to enter an organized class for Fall Semester
- September 10—Monday—Last day to drop a course without a grade
- September 28—Friday—Last day for filing application for a December degree in College Dean's Office
- October 22—Monday—Last day to withdraw from the University and receive any refund
- October 29—Monday—Last day to pay graduation fee in Billings and Collections Office for a December degree
- November 1—Thursday—Last date to submit all required documents to Graduate Admissions Office for admission and readmission to the 1974 Spring Semester
- November 7-20—Wednesday through Tuesday—Advanced registration for 1974 Spring Semester
- November 7—Wednesday—Last day to withdraw from a class before finals
- November 22, 23, 24—Thursday through Saturday—Thanksgiving Holidays (Academic Holidays)
- December 13—Thursday—Thesis Deadline
- December 13—Thursday—Class work ends
- December 15-21—Saturday through Friday—Final examinations
- December 21—Friday—End of Fall Semester—All grades due in Registrar's Office by 4 p.m. three days after final examination is administered

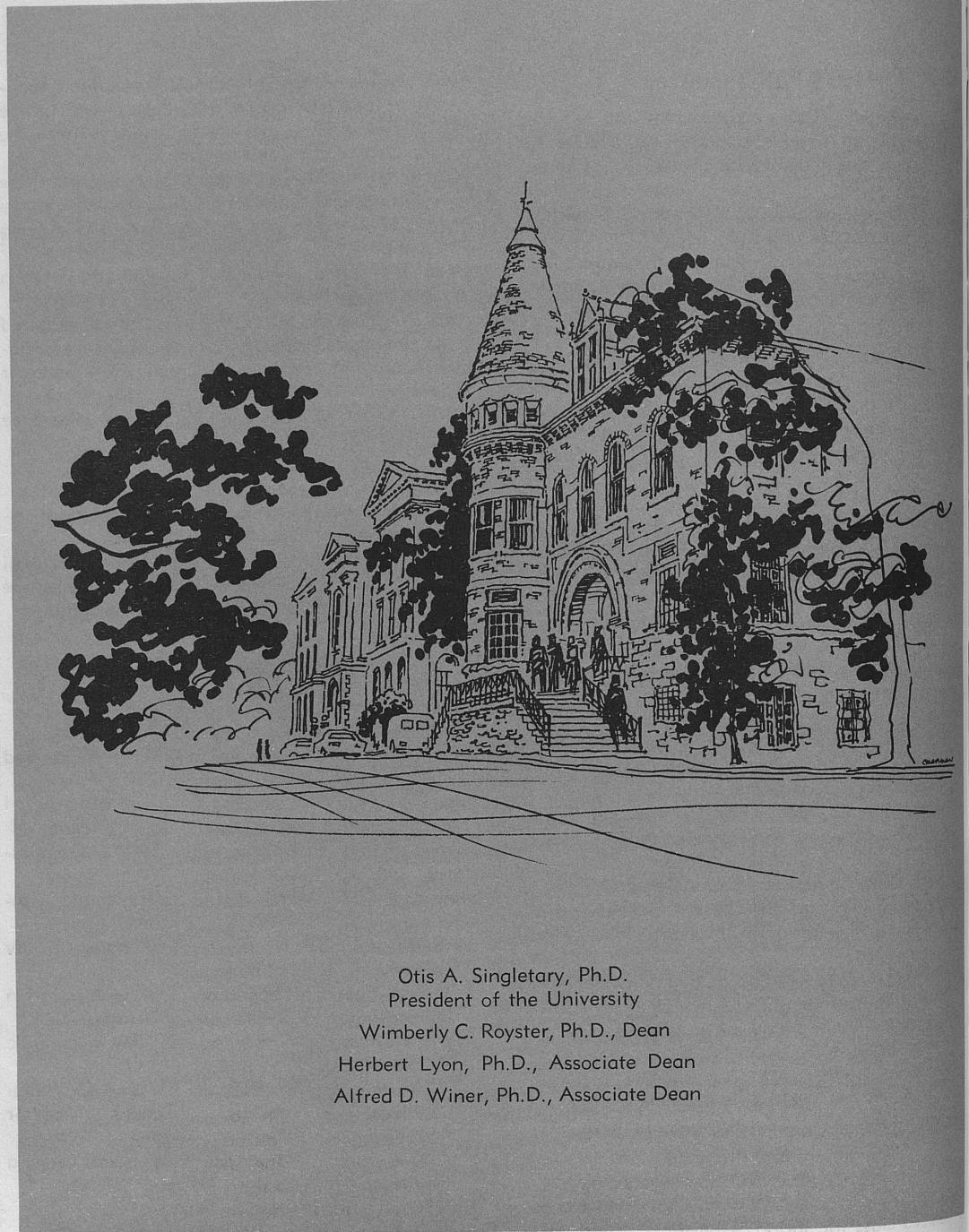
1974 Spring Semester

- January 14, 15—Monday and Tuesday—Classification, registration, and drop-add
- January 16—Wednesday—Class work begins
- January 22—Tuesday—Last day to enter an organized class for Spring Semester
- January 28—Monday—Last day to drop a course without a grade

- February 14—Thursday—Last day for filing application for a May degree in College Dean's Office
- March 8—Friday—Last day to withdraw from the University and receive any refund
- March 15—Friday—Last day to pay graduation fee in Billings and Collections Office for May degree
- March 18-23—Monday through Saturday—Spring vacation
- April 1—Monday—Last day to withdraw from a class before finals
- April 2—Tuesday—Last date to submit all required documents to Graduate Admissions Office for admission and readmission to all 1974 Summer Sessions
- April 15-26—Monday through Friday—Advance registration for 1974 Fall Semester
- May 3—Friday—Thesis Deadline
- May 4—Saturday—End of class work
- May 6-11—Monday through Saturday—Final examinations
- May 11—Saturday—End of Spring Semester. All grades due in Registrar's Office by 4 p.m. three days after final examination is administered

1974 Summer Session

- June 10—Monday—Registration
- June 11—Class work begins
- June 14—Friday—Last day to enter an organized class for the 1974 Summer Session
- June 14—Friday—Last date to submit all required documents to Graduate Admissions Office for admission and readmission to the 1974 Fall Semester
- June 21—Friday—Last day to drop a course without a grade
- June 24—Monday—Registration automatically cancelled if fees not paid in full
- June 25—Tuesday—Last day for filing application for an August degree in College Dean's Office
- July 4—Thursday—Independence Day (Academic Holiday)
- July 10—Wednesday—Last day for paying graduation fees in Billings and Collections Office for August degree
- July 23—Tuesday—Last day to withdraw from a class before the end of the Summer Session
- July 30—Tuesday—Thesis Deadline
- August 6—Tuesday—End of Summer Session
- August 9—Friday—All grades due in Registrar's Office by 4 p.m.



Otis A. Singletary, Ph.D.
President of the University
Wimberly C. Royster, Ph.D., Dean
Herbert Lyon, Ph.D., Associate Dean
Alfred D. Winer, Ph.D., Associate Dean

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The Graduate School

The University of Kentucky began offering graduate work in 1870 and awarding graduate degrees in 1876. The Graduate School as a distinct unit was organized in 1912.

The Graduate School is concerned with advanced study and research carried on by the faculty and students of all colleges and departments. Under it the total graduate resources of the University are merged in order to promote the achievement of knowledge in an atmosphere of free and lively inquiry.

Graduate work is offered in most colleges in the University. A general description, tabulation of courses, and name of the Director of Graduate Study for each of the various programs is given in the Subjects and Directors of Graduate Study section of this bulletin.

The following advanced degrees are conferred:

Doctor of Philosophy

Offered in following fields:

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

Master of Arts

Offered in following fields:

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

Master of Science

Offered in following fields:

Anatomy	Microbiology
Agricultural Economics	Pharmacology
Agronomy	Pharmaceutical Science
Animal Sciences	Physics
Biochemistry	Physiology and Biophysics
Botany	Physical Education
Chemistry	Plant Pathology
Economics	Psychology
Entomology	Statistics
Geology	Toxicology
Mathematics	Zoology

Master of Science in Agriculture

Offered in following fields:

Agricultural Economics	Horticulture
Agronomy	Plant Pathology
Animal Sciences	Sociology
Entomology	

Other Degrees

Doctor of Business Administration	Master of Science in Dentistry with Specialty in Orthodontics
Doctor of Education	Master of Science in Electrical Engineering
Doctor of Musical Arts in Music Teaching	Master of Science in Engineering Mechanics
Master of Arts in Education	Master of Science in Home Economics
Master of Science in Education	Master of Science in Library Science
Master of Business Administration	Master of Science in Mechanical Engineering
Master of Fine Arts	Master of Science in Medical Radiation
Master of Music	Master of Science in Metallurgical Engineering
Master of Science in Accounting	Master of Science in Nuclear Engineering
Master of Science in Agricultural Engineering	Master of Science in Nursing
Master of Science in Chemical Engineering	Master of Science in Radiological Health
Master of Science in Civil Engineering	Master of Social Work Specialist in Education
Master of Science in Clinical Nutrition	
Master of Science in Computer Science	

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 School must be included in the agenda of the meeting and circulated to the Graduate Faculty at least 10 days prior to the meeting at which it is to be considered.

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

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

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

Associate members are appointed by the Dean of the Graduate School upon nomination by the Director of Graduate Study. Associate membership is limited to non-tenured assistant professors who hold the doctorate, have been full-time members of a faculty for at least one year, and have initiated a significant research effort. This membership may continue no more than five years. Associate members are authorized to teach graduate courses, direct masters' theses, serve on and co-chair doctoral committees, and attend and participate in Graduate Faculty meetings. They do not have voting privileges in the Graduate Faculty.

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

The Dean and His Office

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. He presides over all meetings of the Graduate Faculty and calls meetings of this faculty whenever he thinks it advisable or whenever requested to do so by one-fourth of the membership. He makes recommendations 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. He appoints a committee for each graduate student, arranges for final examinations, advises students with regard to their studies and the requirements of the Graduate School, and in all other ways administers the graduate program in the interests of efficient instruction and the highest attainment possible on the part of each graduate student. He is responsible for determining and certifying to the Registrar candidates who have fulfilled requirements for advanced degrees.

The President and the Dean of the Graduate School are members ex officio of all committees of the Graduate Faculty.

The Graduate Council

The Graduate Council is composed of 13 members and the Dean of the Graduate School, who is chairman. There are eight elected faculty representatives and three faculty members appointed by the Dean of the Graduate School. One of the elected members is from the College of Agriculture, two from the College of Arts and Sciences, one from the College of Business and Economics, two from the College of Education, one from the College of Engineering, and one from the College of Medicine. The member or members from each of these colleges are elected by the Graduate Faculty members in that college. Two graduate student members are selected by the Council from a panel of four submitted by the Graduate and Professional Student Association. The term of office of the elected and appointed members is three years, and that of the graduate students is one year. No member may succeed himself until three years have elapsed since the completion of his last term.

The Graduate Council approves or disapproves proposals concerning courses offered for graduate credit, and advises and lends assistance to the Dean in his execution of 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 Study

A Director of Graduate Study serves as adviser to each student majoring in his area until the student has a thesis director. The Director of Graduate Study then recommends that the thesis director be appointed the student's adviser or committee chairman. In areas where theses are not required, the Director of Graduate Study 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 Study may recommend that additional advisers in the area be appointed. A Director of Graduate Study who is to be absent from the University for as long as a semester must call this fact to the attention of the Dean so that a substitute may be appointed.

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

Establishment and Modification of Graduate Programs

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

Honorary Degrees

The selection of candidates for honorary degrees originates in the Graduate Faculty, and the Graduate Faculty makes its recommendations to the University Senate.

Honorary degrees are normally conferred at the May Commencement, but may be conferred at other

times with the approval of the Graduate Faculty. Recipients must be present in order to receive honorary degrees.

STUDENT RESPONSIBILITY

It is the responsibility of the student to inform himself concerning all regulations and procedures required by the course of study he is pursuing. **In no case will a regulation be waived or an exception granted because a student pleads ignorance** of the regulation or asserts that he was not informed of it by his adviser or other authority. Therefore, the student should become familiar with the Graduate School Bulletin, including (1) the section presenting the requirements for the degree which he plans to take, and (2) the offerings and requirements of his major department.

The student should consult the Director of Graduate Study of the department in which he will do his work concerning course requirements, any deficiencies, the planning of a program, and special regulations. Departments may have degree requirements that are not listed in the Bulletin.

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

Admission

A student who has a baccalaureate degree from a fully accredited institution of higher learning and has an undergraduate grade-point standing on all work attempted of at least 2.5 on the basis of 4.0 or who, on the recommendation of the appropriate director of graduate study, can satisfy the Dean of the Graduate School that he has the equivalent of such a background may be considered for admission to the Graduate School by submitting to the Graduate Admissions Office two official transcripts of all college courses and a written application prior to the deadline listed in the Graduate School Calendar. Application blanks may be obtained from the Admissions Office of the Graduate School. A student with a grade-point average of less than 2.5, or a graduate of a non-accredited institution, may be admitted only after the Graduate Record Examination (GRE) and other evidence acceptable to the department and the Dean of the Graduate School is submitted indicating that he is capable of doing satisfactory graduate work. Individual departments may establish higher requirements.

It should be clearly understood that a graduate student may not be able to begin immediately a full graduate program leading to the degree he de-

sires; it may be necessary for him to satisfy prerequisites which he omitted in his undergraduate curriculum. Deficiencies are determined by the department in which the major work is to be done. Ordinarily, a graduate student may begin a full program in any field in which he has a balanced undergraduate major or its equivalent.

Admission to the Graduate School entitles a student to take such courses as he desires, provided he has the necessary prerequisites. **However, admission does not automatically make a student a candidate for a graduate degree.**

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.

FOREIGN APPLICANTS

For applications purposes, **any non-U.S. citizen is a "foreign student;"** including permanent residents of the U.S. Applicants should 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 following a 12-year elementary-secondary program. **Indian students:** (a first class record is normally expected although **high second class holders in non-science areas may be considered** if they can offer further evidence of having been in at least the top 10 percent of their graduating class).

When credentials are submitted in support of any application, they should be either the original documents or certified copies (i.e., copies certified as "true copies" by a notary public or a United States Embassy official). An official translation must be attached to these records if they are in a language other than English. Credentials should include a record of all degrees earned, detailing all subjects taken and grades obtained. Remember that uncertified photostat copies are not adequate.

English Proficiency Requirement: The University of Kentucky requires the Test of English as a Foreign Language (TOEFL) of all applicants whose native tongue is not English, **including those from India.** The test is given in October, January, March and June. To register you must obtain the **TOEFL Bulletin**, which includes a registration form. **Bulletins** are available in many locations outside the U.S., usually at American embassies and consulates, offices of the United States Information Service (USIS), United States educational commissions and foundations, binational centers, and many private

organizations such as the Institute of International Education (IIE), African American Institute (AAI), American Friends of the Middle East (AFME), and American-Korean Foundation.

Important Notice: Candidates who want to be tested in Hong Kong, India, Nepal, or the Republic of China (Taiwan) **must** use the special editions of the **TOEFL Bulletin** for these countries and adhere to their special regulations and schedules. Copies of these special bulletins can be obtained at the addresses given below:

Hong Kong Edition: (1) Examinations Section, Education Department, Canton Road Government Offices, 11th Floor, Canton Road, Kowloon; (2) Overseas Students & Scholarships Section, Education Department, Lee Gardens, 3rd Floor, Causeway Bay, Hong Kong; (3) Institute of International Education, 408 J. Hotung House, 4th Floor, 5/15 Hankow Road, Tsimshatsui, Kowloon.

India & Nepal Editions: Test of English as a Foreign Language, Bureau of Educational Research, Ewing Christian College, Allahabad 3, U.P., India.

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

Students who cannot obtain a **TOEFL Bulletin** and registration form locally should write for them, **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 \$3400 available per academic year. We estimate that this amount will cover the cost of tuition fees (\$1260), books and supplies, room and meals, health insurance (explained below) and incidentals, **for a single person**, from the end of August to early May. The summer session costs will total \$900-\$1100 additional.

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

Financial Aid: The deadline for **non-service fellowships** is February 1 for the following fall semester. **Research assistantships** are occasionally given to first-year graduate students in departments requiring laboratory work. Students should write to the Chairman of the department to which they are applying, for information about assistantships.

University Housing: For information on University of Kentucky housing, write well in advance to: Housing Operations, 218-L Service Building, University of Kentucky, Lexington, Kentucky 40506.

Health Insurance Requirements & Information: **Health Services.** The University of Kentucky has a fine health care program for its students. The

Student Health Service clinic on the campus is staffed with physicians, surgeons, psychiatrists, social workers and nurses who are specialists in the health problems of young adults.

Health Fee. At the time tuition is paid, students pay a health fee (\$7 per semester in 1972-73) which helps to support the health program. After the fee is paid there are no further charges for most of the services provided at the student health clinic. Foreign students are required to pay the health fee each semester.

Health Insurance. In addition to paying the health fee, students must have health insurance to cover the cost of hospitalization, accident care and surgery. These costs are very high in the United States and students must protect themselves (and their families if they are married). As a service to students who need insurance, the University makes available a low-cost Blue Cross and Blue Shield Student Group Insurance Plan that is the most comprehensive and cheapest insurance a student can obtain.

At the beginning of the first semester on campus, foreign students must present evidence at the Student Health Service Insurance Office that they have current insurance that is payable in the United States, or they must be prepared to enroll in the University's student insurance plan. They must carry some type of health insurance, either their own plan or the U.K. student insurance, as long as they are enrolled at the University. The policy for a single student costs about \$50 per year; it is paid in two installments of about \$25 every six months. The coverage of the policy begins August 26 for those entering in the fall. Family protection is also available through the student insurance plan. The cost for a student and non-student spouse (without maternity benefits) is about \$55 every six months. If there are children in the family, or if maternity benefits are desired, the cost is about \$85 every six months to cover the entire family.

Brochures describing the benefits of the insurance policy and the services covered by the health fee are available at the Health Service. A student with the benefits provided by the health fee and the coverage provided by the U.K. Student Group Health Insurance Plan can be sure that the cost of an illness will not be a catastrophe. It should be noted that dental care and examinations for glasses and some drugs are not provided by either plan.

Health Report Form. Foreign students cannot be accepted for admission until the Graduate Admissions Office has received a completed health report form, indicating that the student has had a recent physical examination. Health forms are mailed with the other application documents that a

student receives from the Graduate Admissions Office.

Application Deadline For Foreign Students: Applications for admission and complete credentials should reach us **at least** six months before the opening of the term you wish to enter, that is, March 1 for the fall semester; July 15 for the spring semester; and November 1 for all summer sessions.

GRADUATING SENIORS AS PART-TIME GRADUATE STUDENTS

A senior in the University of Kentucky lacking no more than six credit hours for graduation and having an undergraduate average of at least 2.5 on all work attempted may register in the Graduate School with the consent of his college dean and the Dean of the Graduate School. Approval of the appropriate director of graduate study is required if the student is to be an applicant for a degree. The total load of such a student may not exceed 12 credit hours. Graduate credit will be allowed for each credit hour of graduate work beyond the six or fewer credit hours needed to complete undergraduate requirements. Requirements for the undergraduate degree must be completed during the semester in which the student is allowed to register for part-time graduate work. Students desiring to enroll in the Graduate School under these conditions must fill out in duplicate a petition listing the course or courses to be taken in order to complete their undergraduate requirements. The petition must be approved by both deans concerned.

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 above the Master's degree at the University.

General 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, a graduate student must obtain his adviser's approval of his proposed program.

THE GRADUATE RECORD EXAMINATION

All students working for graduate degrees must take the Aptitude Test of the Graduate Record Examination. In addition, individual programs may require other portions of this examination. This must be done no later than the first term of graduate work.

The College of Business and Economics may substitute the Admission Test for Graduate Study in Business (ATGSB) for the Graduate Record Examination for MBA, DBA and Accounting students.

The Medical College Admission Test may be substituted for the verbal and quantitative portions of the GRE with the approval of the program concerned.

Students who have earned a doctorate are exempt from MCAT or the GRE.

APPLICATION FOR FULL GRADUATE STANDING

A graduate student desiring to earn a graduate degree **must be approved for full graduate standing** by the Director of Graduate Study in the area in which he intends to major and by the Graduate School. Application should be made as soon as scores on the Graduate Record Examination are available, and in any case prior to the beginning of the semester or term in which the degree is sought.

To be admitted to full graduate standing, a student must have scores on the Graduate Record Examination satisfactory to the department concerned and to the Dean of the Graduate School, and a B average or higher on all graduate work attempted at the University of Kentucky.

Graduate work taken before a student is admitted to full graduate standing will be evaluated by the Director of Graduate Study in the major area and by the Dean of the Graduate School at the time the application for full graduate standing is considered.

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 his graduate adviser or committee. Courses numbered 400 to 499 carry graduate credit for nonmajors only. An over-all average of B on all work taken as a graduate student, as well as a B average on all work carrying graduate credit, must be attained before an advanced degree may be awarded. All work is to be counted and none of it may be omitted in

computing the average. However, those grades in courses which do not give graduate credit may be omitted from a student's average by the Dean of the Graduate School on recommendation of the student's adviser. 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.

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

DROPPING OF COURSES

During the first 10 class days of the term a graduate student may drop a regular course without a grade, provided he has the approval of his instructor, his Director of Graduate Study, and the Dean. Regular courses may not be dropped later in the term without the assignment of a grade: W if a student withdraws passing, E if he is failing. However, only under very special circumstances may he be allowed to withdraw from a class within five weeks of the final examination period.

GRADES

The official grades of graduate students are recorded in the office of the Registrar. The Registrar provides official transcripts on the same basis as for undergraduate students. Also, he provides the Dean with the grades of all students in order that the Dean may be able to advise students concerning their programs.

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

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

A grade of I (incomplete) may be assigned to a graduate student if a part of the work of a course remains undone and there is a reasonable possibility that a passing grade will result from completion of the work. No student may graduate with an I on his record without the permission of his adviser and the approval of 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 if he has 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.

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 term load of a student is the sum of all credits and credit equivalents being carried. The normal load of a graduate student during any semester is 12 credit hours or equivalent and under no circumstances may it exceed 15 credit hours or equivalent. In the summer session, the load for the eight-week session is nine credit hours, the six-week session is six credit hours, and the four-week intersession is four credit hours. The maximum load for any combination of the six and eight-week sessions shall be nine credit hours. The maximum load for summer and intersessions is thus 12 credit hours. Students satisfactorily completing in residence nine course credits, or equivalent, of graduate level work during a semester, or six course credits, or equivalent, during a summer term are classified as full-time or full-residence students. Those completing less than these amounts are classified as part-time or part-residence students.

A full-residence student who falls below the minimum full-residence equivalent as the result of failing or dropping one or more courses is reclassified as a part-time or part-residence student for that term.

A master's candidate working on his thesis may register for up to the equivalent of six course credits by signing for course 768 in the appropriate department and indicating the desired credit equivalent in parentheses on the registration card.

A doctoral candidate working on his dissertation

may register for up to the equivalent of 12 course credits by signing for course 769 in the appropriate department and indicating the desired credit equivalent in parentheses on the registration card.

Graduate students serving in the University as assistants or part-time instructors should register for less than the normal load, as determined by their advisers. Persons holding full-time working or professional assignments, whether employed by the University or not, may not take more than five credit hours for graduate credit toward a degree in any single semester or term. A student may petition for a waiver of this rule if he meets the following conditions: (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.

SHORT COURSES—WEEKLY COURSES

Short courses are defined as courses of less than a term in length; weekly courses are courses of more than one credit that meet only once a week. 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. Not more than 12 hours of the course work requirements for a degree may consist of courses (resident and extension) that meet only once a week.

VISITING STUDENTS

A student at the University of Kentucky who plans to attend another accredited Graduate School as a Visiting Student must be admitted to that Graduate School in order to transfer credits earned as a Visiting Student.

TIME LIMIT FOR DEGREES

No course or equivalent credit may be given for graduate study completed more than eight years prior to the end of the semester at which the student expects to receive his degree unless such credit or equivalent is specifically validated by the Graduate Council on written recommendation of the appropriate director of graduate study. No course or equivalent credit may be validated in this manner if completed more than 12 years prior to the end of the semester in which the student expects to receive his degree.

GRADUATION

Advanced degrees may be conferred at the close of any semester or summer session, but commencement exercises are held only at the close of the academic year. Students who are eligible to receive degrees at the end of a first semester or a summer session may elect to defer their graduation and participate in the next commencement exercises. Appropriate academic costume must be worn. The graduation charges cover the cost of binding of the thesis or dissertation, microfilming, and copyright as appropriate to the degree.

To be eligible for a degree, the student must file an application at the Graduate Office within 30 days after the beginning of the semester or 15 days in the Summer Session in which he expects to complete his work. The degree applicant must pay his graduation charges within 60 days after the beginning of the semester or 30 days in the Summer Session in which he expects to complete his work.

FEES

Registration fees per semester are \$265 for residents of Kentucky, \$630 for non-residents. Part-time graduate students who are legal residents of the state pay \$30 per semester hour; non-residents pay \$70 per semester hour. Resident students in the summer will pay \$30 per semester hour; non-residents \$70 per semester hour. The Registrar determines the status of one's residence for purposes of assessing fees.

Graduate fellows, graduate assistants, and instructors pay the fees assigned to Kentucky residents.

General Requirements for All Masters' Degrees

(See also General Requirements for All Advanced Degrees)

ON-CAMPUS RESIDENCE

At least 18 semester hours of the minimum degree requirements must be earned while in residence on the Lexington campus of the University of Kentucky. Normally, candidates for masters' degrees must spend at least two full summer terms or one semester in full residence at the University. For individual superior students the full residence requirement may be waived if recommended by the Director of Graduate Study in the student's major area and approved by the Graduate Dean. Minimum eligibility for being so recommended includes:

(1) the satisfactory completion of 12 credit hours of graduate work, (2) the attainment of national average scores on the Graduate Record Examination, and (3) the availability of employment facilities and conditions which make feasible satisfactory completion of degree requirements while the student is fully employed.

TRANSFER OF CREDITS

With the approval of his graduate adviser and the dean, a student may transfer up to six credit hours toward the satisfaction of the minimum requirements of the Graduate School for the master's degree, provided the work in question was taken while he was enrolled in residence in an approved graduate school.

As many as six credit hours with the grade of A or B, earned in regular graduate courses by one enrolled as a non-degree student at the University of Kentucky, may be counted toward the requirements for a graduate degree. These credits must be earned in the year immediately preceding the student's acceptance and enrollment in the Graduate School and must be appropriate to his program of study for the graduate degree. The use of such credits must have the approval of the student's Director of Graduate Studies and the Dean of the Graduate School.

EXTENSION AND CORRESPONDENCE WORK

Under certain conditions, up to six of the credit hours required for any master's degree may be earned in extension courses. So that Extension taken at another approved Graduate School be transferable, it must be taken while enrolled in that Graduate School. 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 may 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.

A student may work toward only one master's degree at a time. He must establish at least one year of residence while earning a second master's degree.

EXAMINATION

A final examination (oral and/or written) is given all candidates for master's degrees not later than eight days before the close 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 him 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 Study 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 the candidate fails his 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 may not be allowed.

FEES

Before any master's degree may be conferred the student must pay the appropriate thesis fees at the Billings and Collections Office.

Requirements for the Degrees of Master of Arts and Master of Science

The Graduate School authorizes all graduate programs which wish to do so 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 his courses in this

area; the other one-third may be taken in this area or in areas which have a graduate relationship to it. In Education, Agriculture, and Communications only one-half of the work must be in the major area. When the setting up of major topics seems to require it, the Graduate Council may, on recommendation of the appropriate Director of Graduate Study, authorize courses taught outside the major to count on the major.

Thesis

Before the final examination may be taken the thesis director and the appropriate Director of Graduate Study **must indicate to the Graduate School** that in their opinion 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 therefore the student is ready to defend his thesis. If the final examination committee indicates that the student has passed the final examination, he then must make the modifications in the thesis which the committee specified as being necessary.

The final copy must then be typed, and together with an approval form signed by the thesis director, and the Director of Graduate Study the thesis must be submitted to the Graduate School to have it checked for form. Two typewritten, unbound copies of the thesis in final form must be in the Graduate School not later than the dates given in the calendar in the front of this bulletin. The copies must be on **100 percent rag or cotton fiber paper**. Instructions for the preparation of theses should be obtained from the Graduate School before the thesis is typed. The candidate must also submit an abstract of not more than 200 words which is suitable for publication.

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, but there must be enough independent effort to enable each student to make a separate contribution and to prepare an individual thesis.

Each thesis must be acceptable to the examining committee at the time of the final examination.

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.

Foreign Language Requirement

A reading knowledge of a modern foreign language is required by some departments. Ordinarily this language will be French, German, or Russian, but another language may be substituted if it can be shown to be pertinent to the student's program and is approved by the adviser and the Dean of the Graduate School. The language requirement must be satisfied by an examination given by the appropriate language department of the University or by such persons as the Graduate Dean may specify, or by passing, with a grade of A or B, one or more of the accelerated courses especially designed for this purpose (French 011, German 021, Italian 009, Spanish 011). The student who satisfies the undergraduate foreign language requirement at the University of Kentucky with a grade average of B or better may use this as satisfying a graduate foreign language requirement with the approval of his adviser and the Dean of the Graduate School. A candidate for a degree in the language which is his native tongue must do a full major (one-third of his work) in areas in which English is the language employed.

Plan B

Plan B (which is not necessarily available in all departments that have Plan A) 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.

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

Requirements for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy is conferred upon a candidate who, after completing not fewer than three years of graduate work devoted to study of a special field of knowledge, presents a satisfac-

tory dissertation, passes a comprehensive examination on his dissertation subject and chosen field, and shows sufficient promise of scholarly attainment.

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

THE STUDENT'S ADVISER AND SPECIAL COMMITTEE

The Director of Graduate Study in the student's major area serves initially as the student's adviser and signs his schedule before it is presented to the Dean. When the dissertation director has been chosen, the student's special committee is set up by the Dean after he has conferred with the student, the Director of Graduate Study, and the dissertation director.

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

A department which elects to do so may give a uniform departmental qualifying examination to its candidates instead of delegating full responsibility to the special committee.

MAJOR AND MINOR SUBJECTS

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

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

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

RESIDENCE REQUIREMENTS

A minimum of three collegiate years of full-residence graduate work or its equivalent in a combination of full- and part-time residence, is required for the doctorate. At least two semesters (exclusive of summer sessions) of the required residence above the master's degree (or its residence equivalent) must be earned at the University of Kentucky in full-residence status, or in a combination of graduate study, research, and not more than half-time assignment as a research or teaching assistant. "Residence equivalent" to the master's degree is interpreted as one academic year of full-residence graduate work or its equivalent in a combination of full- and part-time residence.

A year of residence is required after the qualifying examination before the degree is conferred. If the examination is completed within the first six weeks of a semester, that semester will count as half the year. If a student has passed his qualifying examination but has earned less than one year of residence after the qualifying examination, he may petition the Graduate Dean for a waiver of this requirement.

The amount of residence to be transferred on account of prior graduate work at some other institution is determined jointly by the Director of Graduate Study in the area and the Dean of the Graduate School. Ordinarily, however, graduate students may be allowed only one year of residence toward the doctorate for earlier study which has been used to satisfy the requirements for a master's degree or masters' degrees.

Candidates working on the dissertation project who need residence credit should register for course 769 in proportion to the amount of time to be devoted to the project. Students working full-time on the dissertation should register for the equivalent of 12 credits; i.e., 769 (12). Those devoting less than full time should register for proportionately less 769 residence.

Should conditions merit or require that all or part of the dissertation project be carried out away from the campus of the University of Kentucky and the arrangement has the approval of the candidate's dissertation director and the Dean of the Graduate School, needed minimum residence credit can be gained by registering for course 769 as described above for on-campus candidates.

Students with full-time positions and who are taking no credit course work may register for no

more than the 769 equivalent of five credits per semester or three credits per summer term.

While it is expected that a well-prepared student of good ability may secure the degree upon completion of three years of full-time study, it should be understood that this requirement is a minimum and is wholly secondary to scholarly accomplishment.

Students who have fulfilled the minimum residence requirements for a graduate degree and who are not registering for course credits but who are carrying out on-campus dissertation work, hence are utilizing University faculty and/or facilities either full-time or part-time, must register during each term of such on-campus activity.

LANGUAGE REQUIREMENTS

As stated in the specific program description, an applicant must have a reading knowledge of one or two modern foreign languages. The language or languages will normally be chosen from French, German, or Russian. However, with the approval of the student's special committee, the Director of Graduate Study in the area, and the Graduate Dean, certain substitutions may be made:

1. Some other language may be substituted for one of those normally required if it can be demonstrated that the student's scholarly needs will be better served thereby.
2. In special cases fluency in one foreign language may be substituted for a reading knowledge of two languages.

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

THE QUALIFYING EXAMINATION

A qualifying examination is required of all applicants for the doctorate in order to determine whether the applicant should be admitted to candidacy. Normally this examination is prepared by the student's special committee (see The Student's Adviser and Special Committee Section) and should be taken during or after the student's fourth semester of full-time graduate study, or the equivalent. The qualifying examination shall be both written and oral. The special committee reports to the Dean

the result of the examination within 60 days of the beginning. If the result is failure, the committee recommends the conditions to be met before another examination may be administered. The minimum time before another examination may be given is four months. The same committee, or as many of the members as are available, plus those added by the Dean to fill vacancies, gives the second examination. A third examination may not be allowed.

THE DISSERTATION

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

Each graduating doctoral student will pay charges to cover microfilming, copyright and binding of the dissertation. Payment will be made at the Billings and Collection Office.

THE FINAL EXAMINATION

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

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

The examining committee consists of a minimum of five persons appointed by the Dean of the Graduate School with the Director of Graduate Studies (or his delegate) serving as chairman. Other members include the Dissertation Director, a third representative of the department, a representative of the minor area, and one member of the Graduate Faculty associated with neither the major nor minor areas. The President of the University and the Dean of the Graduate School are ex officio members of all examining committees. The final examination includes a defense of the dissertation and may be as comprehensive in the major and minor areas as the committee desires to make it. In all decisions the majority opinion of the committee prevails. If the committee is evenly divided, the candidate fails.

If the candidate fails, the committee may recommend to the Graduate Dean the conditions under which the candidate may have another examination. This examination will be administered by as many of the original committee members as are available, plus new members appointed by the Dean to fill vacancies.

If the student passes this examination, he will be recommended for the degree at the next commencement, provided one academic year has elapsed since the qualifying examination.

COMBINED MEDICAL AND GRADUATE STUDIES

The student who wishes to combine studies toward an M.D. degree and a Ph.D. degree in one of the established programs of the Graduate School must gain admission to both programs. Before applying for admission to the Graduate School the applicant should consult with the Director of Graduate Study of the graduate area of interest.

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

Any student 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, he will pay Graduate School in proportion to the amount of graduate work taken.

Requirements for the Degree of Doctor of Education

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

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

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

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 co-

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

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

Requirements for the Degree of Doctor of Musical Arts

The requirements for the degree of Doctor of Musical Arts are the same as for the Doctor of Philosophy, with the following exceptions:

1. Only one foreign language, normally French or German, is required for the D.M.A. degree. The candidate must also demonstrate a working knowledge of musical terms in French, German, and Italian prior to the qualifying examination.
2. The applicant for this degree must have at least two years of successful teaching experience.

Further and more detailed information concerning prerequisites and courses of study, can be found in the School of Music section.

The Director of Graduate Study of the Department of Music and the Graduate Dean will evaluate credits and residence to be allowed transfer students. It is understood, however, that the special committee may accept only such courses as fit into the graduate program of the student.

Requirements for the Degree of Doctor of Philosophy in Musicology

In addition to the general requirements of the Graduate School for the degree of Doctor of Philosophy the following are required for a specialization in Musicology.

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.

All applicants must provide evidence of competence in research and writing. Those applicants holding or earning a baccalaureate degree should

present at least one term paper or the equivalent, such as the senior honor thesis. Applicants with a Master's degree must submit the M.A. thesis. If the applicant has not completed a Master's degree including a thesis, he or she must submit research papers of acceptable scope and quality **plus** a major research project undertaken as part of work done at the University of Kentucky or the University of Louisville.

Language Requirements

The foreign languages required for the Ph.D. in Musicology are German and either French or Italian, plus any other languages (e.g., Latin, Spanish, Russian) required for preparing the dissertation.

Further and more detailed information concerning the Doctor of Philosophy in Musicology may be found in the School of Music section.

Requirements for the Degree of Doctor of Business Administration

The requirements for the degree of Doctor of Business Administration are the same as for the degree of Doctor of Philosophy with the exception that no foreign languages are required for the DBA degree.

The Doctor of Business Administration is designed primarily for students interested in teaching and research. It focuses on administrative science and requires additional work in research methodology, economic theory, and quantitative analysis.

Major and minor fields may be selected from Accounting, Finance, Management and Organizational Behavior, Management Science, and Marketing. Further information concerning prerequisites and courses of study can be found in the Business and Economics section, the Degree of Doctor of Business Administration.

Requirements for the Degree of Specialist in Education

The degree of Specialist in Education is conferred upon a candidate who satisfactorily completes a six-year planned program in education under the general requirements of the Graduate School and the following special requirements:

Admission

The student, prior to admission to the program must (1) have a master's degree, (2) ordinarily have a standing of 3.4 or higher on his graduate work, (3) meet the requirements for a teaching certificate or have credentials appropriate to his field of specialization, and (4) have at least 30 credit hours in

courses in education (undergraduate and graduate).

A student must file application with the Coordinator of 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 department in which he plans to major, as well as the Admissions Committee.

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 the student plan a program to meet his needs. The program should contribute to specialization in a field but should not neglect the broader development of the individual.

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

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

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 study and appointed by the Dean of the Graduate School.

Graduate Students Not Applicants for Degrees

Graduate students who are not working toward advanced degrees are not required to designate major or minor subjects, but may elect their work with a view to the special purposes for which they are in attendance at the University.

Any course of study announced for advanced undergraduates and graduates is open for election by such students under the same conditions as apply to candidates for degrees.

Should a graduate student who has not taken his work with a view to obtaining a degree subsequently desire to become an applicant for a degree, the number of credit hours he is to receive for work already done will be determined at the time he applies for admission as applicant for the degree.

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.

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.

Southern Regional Training Program in Public Administration

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

Center For Developmental Change

The Center for Developmental Change (CDC) is a special unit which reflects the efforts of the University of Kentucky to define and attack the contemporary problems of social and economic development.

Developmental change is defined as planned and innovated change, directed toward the attainment of chosen goals. The Center undertakes, promotes and stimulates the study of developmental change. It seeks greater understanding of change processes and more widespread dissemination of the knowledge and skills of application. It is concerned with

how better to train people to work on development problems.

CDC correlates certain domestic and international research, action, and training programs. Domestic projects are focused on Kentucky and Appalachia, with regional studies of urban and rural problems. The international projects include technical assistance and education support programs, such as training Peace Corps Volunteers for India and establishing an agricultural center in Northeast Thailand.

The Center seeks to introduce ways of learning systematically about the processes of developmental change into the projects and programs of the appropriate units of the University. To encourage the study of developmental change, the Center provides graduate assistantships and coordinates a Ph.D. minor concentration in developmental change.

Advanced Study and Research by Guests of the University

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 advanced 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.

Nonservice Fellowships

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

Haggin Fellowships: The fellowships, endowed by Margaret Voorhis Haggin in memory of her father, George Voorhis, have a stipend of \$2600 per academic year. Each has a tenure of one academic year and is competitively renewable.

University of Kentucky Research Foundation Fellowships: The University of Kentucky Research Foundation supports fellowships of \$2600 per academic year, which are competitively renewable.

Dissertation Year Fellowships: One academic year fellowships open to doctoral students who have

passed the qualifying examination and will be working on the dissertation. Each fellowship has a stipend of \$3000 per academic year and is not renewable.

Patterson Fellowships in Diplomacy and International Commerce: Patterson Fellowships of \$2600 are available from an endowment established by President James K. Patterson, the first president of the University. Eligibility requires an enrollment in graduate programs of Diplomatic History, International Business, International Politics and Comparative Government, or International Economics. The fellowship stipend is \$2600 per academic year and is competitively renewable.

The Dr. Paul I. Murrill Memorial Scholarship: This scholarship was established by Mrs. Paul I. Murrill in memory of her husband, who was a graduate of the University of Kentucky. It pays a variable stipend of approximately \$2600 a year to a student who possesses outstanding qualities of character and aptitude for graduate work. Preference shall be given to scholars in the field of chemistry.

The Robert N. Jeffrey Fellowships: These fellowships are supported by the Jeffrey Memorial Endowment Fund set up by Mrs. Helen Lasby Jeffrey in honor of her husband, Robert N. Jeffrey, who was formerly Plant Physiologist at the Agricultural Experiment Station. These fellowships pay a stipend of \$2600 to \$3000 and are subject to renewal if the progress of the student is satisfactory. They are open to Ph.D. applicants in all areas of the University concerned with tobacco research. The fellows' dissertation research must apply directly to tobacco.

Institutional Grant Fellowships: The National Science Foundation supports fellowships of \$2600 per academic year for all graduate programs in the sciences.

Kentucky Bankers Association Fellowship: For a graduate student in accounting with a stipend of \$2600 for the academic year.

Summer Fellowships: The fellowships are available on a competitive basis for the two summer months. The stipend is \$260, \$280, and \$300 per month for first, intermediate, and terminal-year students, respectively.

Scholarships for the above fellowship recipients valued at \$365 per semester to be applied toward the cost of education are available to non-resident students. Tuition for resident students is \$265 per semester and \$630 per semester for non-resident students for the 1974-75 academic year.

Other Fellowships

The George W. Pirtle Fellowship in Geology: A grant of \$1000 a year is given by George W. Pirtle

to a graduate student in geology upon the recommendation of the faculty of the Department of Geology. The award is made upon the basis of need and promise of future achievement in the geological field. Mr. Pirtle has set up this grant in appreciation of the training he received in the Geology Department. He was the first student to obtain the master's degree from the University with a major in Geology.

J. Stephen Watkins Foundation Fellowship for Civil Engineering: The Watkins Fellowship, contributed by the J. Stephen Watkins Foundation, carries a stipend of \$2400, and has been offered every other year beginning in 1965.

Automotive Safety Foundation Fellowships for Civil Engineering, with stipend of \$3000.

United States Steel Foundation Fellowship for a graduate student in history. Stipend of \$2400 annually for two years.

Office of Civil Defense Fellowships in Nuclear Science and Engineering with a stipend of \$2200.

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. The Association promotes friendship and the exchange of ideas among students of the various disciplines and encourages all graduate and professional students to participate in its activities.

Since its beginning the GPSA has proven itself a responsible organization representing the views of the graduate students of the University. The Association, among other things, has initiated a comprehensive Blue Cross-Blue Shield health insurance plan, obtained a ten percent discount on all purchases at the University Bookstore for teaching and research assistants, established a speaker program, published and distributed an information booklet on the University and Lexington, secured parking privileges for graduate and professional students, circulated a newsletter to keep students abreast of developments in all graduate programs as well as in the Association itself, and inaugurated an annual picnic to bring students and administrators together.

The GPSA is eager to serve all graduate and professional students and welcomes suggestions, criticisms or inquiries from any interested person. Written communications may be addressed to GPSA, P.O. Box 817, University Station, Lexington, Kentucky 40506.

Subjects and Directors of Graduate Study

The courses offered for graduate work are listed under the following groups:

Areas	Directors of Graduate Study
Agriculture	
Agricultural Economics	Robert W. Rudd
Agricultural Education	Harold R. Binkley
Agricultural Engineering	(See Engineering)
Agronomy	A. J. Hiatt
Animal Sciences	W. P. Garrigus, George E. Mitchell, Jr.
Crop Science	Norman L. Taylor
Entomology	B. C. Pass
Forestry (No graduate major offered in this department)	
Home Economics Education (See Education)	
Horticulture	Leonard Stoltz
Plant Pathology	Stephen Diachun
Soil Sciences	R. E. Phillips
Veterinary Science	John T. Bryans
Allied Health Professions	
Clinical Nutrition	Paul Thornton
Radiological Health	Joseph A. Sayeg
Medical Radiation	Joseph A. Sayeg
Arts and Sciences	
Anthropology	Lathel F. Duffield
Art	James S. Pierce
Biology	Samuel F. Conti
Botany	Samuel F. Conti
Chemical Physics	Fletcher Gabbard
Chemistry	William D. Ehmann
Classical Languages	Hubert M. Martin, Jr.
Communications	Robert D. Murphy
Computer Science	Ronald Alter
Diplomacy and International	
Commerce	Vincent Davis
English	Joseph H. Gardner, W. S. Ward, Donald A. Ringe
French Languages and	
Literatures	Raymond La Charite
Geography	P. P. Karan
Geology	William R. Brown
Germanic and Classical	
Languages	Wayne Wonderley

History	George Herring, Jr.
Mathematics	Ted Suffridge
Microbiology	Samuel F. Conti
Music	Frank Traficante
Philosophy	Michael Bayles
Physics and Astronomy	Fletcher Gabbard
Plant Physiology	Claus Grunwald
Political Science	Dean Jaros
Psychology	Juris I. Berzins
Slavic and Oriental Languages (No graduate major offered in this department)	
Sociology	Thomas R. Ford
Spanish and Italian Languages and Literatures	William McCrary
Statistics	Richard L. Anderson
Theatre Arts	J. Robert Wills
Zoology	Samuel F. Conti

Business and Economics

Accounting	Charles Haywood
Business Administration	Charles Haywood
Economics	Charles Haywood
Dentistry	William R. Proffit

Education

Administration and	
Supervision	Charles F. Faber
Educational Psychology and	
Counseling	Gordon Liddle
Elementary Education	James Moore
Health, Physical Education, and	
Recreation	Donald R. Kirkendall
Higher and Adult Education	Charles F. Elton
Reading	Earl Rankin
Secondary Education	Harry Barnard
Social and Philosophical Studies	
in Education	David Denton
Special Education	A. Edward Blackhurst
Vocational Education	Harold R. Binkley
Agricultural Education	Harold R. Binkley
Business Education	V. A. Musselman
Distributive Education	Clayton Riley
Home Economics Education ..	Marjorie Stewart
Industrial Education	L. C. McDowell

Engineering

Agricultural Engineering	Blaine F. Parker
Chemical Engineering	Robert B. Grieves
Civil Engineering	Don J. Wood
Electrical Engineering	Earl L. Steele
Engineering Mechanics	Donald Leigh
Mechanical Engineering	C. J. Cremer
Metallurgical and Mining	
Engineering	Hans Conrad

Home Economics

Home Economics	Marjorie Stewart
Housing and Interior Design	Charlotte Bennett
Human Development and Family Relations	David C. Payne
Nutrition and Food Science	Leonard Packett
Management and Family Economics	Carolyn McKinney
Textiles, Clothing and Merchandising	Charlotte Bennett
Library Science	Herman L. Totten

Medicine

Anatomy	Harold F. Parks
Biochemistry	Asl Hu
Pharmacology	Tihamer Z. Csaky
Physiology and Biophysics	David Wekstein
Toxicology	Tihamer Z. Csaky
Nursing	Loretta M. Denman
Pharmacy	
Pharmaceutical Sciences	H. B. Kostenbauder
Social Work	Ernest F. Witte

GRADUATE COUNCIL

1973 - 1974

Joseph A. Bryant (English)	1972-1975
George C. Herring (History)	1972-1974
James A. Knoblett (Accounting)	1973-1976
Gordon P. Liddle (Ed. Psych.)	1972-1975
Vernon A. Musselman (Voc. Ed.)	1973-1975
Donald E. Sands (Chemistry)	1971-1974
D. Milton Shuffett (Agr. Econ.)	1971-1974
Gerard Silberstein (History)	1973-1976
A. H. Peter Skelland (Chem. Engr.)	1973-1976
David R. Wekstein (Phys. & Bio.)	1973-1975

(Member to be appointed—1973-74)

AGRICULTURE
Agronomy
Animal Husbandry
Entomology
Forestry
Horticulture
Plant Pathology
Veterinary Medicine
Allied Health
Allied Health
Clinical
Clinical
Community
Health
Arts and Sciences
Anthropology
Art
Biological
Botany
Microbiology
Plant
Zoology
Chemical
Chemistry
Classical
Communication
Computer
Diploma
English
French
Geography
Geology
German
History
Mathematics
Music
Philosophy
Physics
Political
Psychology
Slavic and
Sociology
Spanish
Statistics
Theatre
Business
Accounting
Business
Economics

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Chemical Physics	36	Nutrition and Food Science	98
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Diplomacy and International Commerce	39	Behavioral Science	101
English	40	Biochemistry	102
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Geography	43	Pathology	102
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Graduate Courses of Study

Agriculture

Coordinator of Graduate Education—
Granville W. Stokes

Requirements for the Degree of Master of
Science in Agriculture and Master of
Science in Agricultural Engineering

(See also section on Requirements for All
Advanced Degrees.)

Students who are graduates of fully accredited
institutions of higher learning may obtain the
degree of Master of Science in Agriculture or
Master of Science in Agricultural Engineering by
satisfying the following requirements:

1. The completion of 24 semester hours of graduate work with an average standing of 3.0 or better, and a thesis, or at the option of the major professor (except in Agricultural Engineering), the completion of 36 semester hours of graduate work with a standing of 3.0 or better, and no thesis requirement. At least one-half of the hours must be on the 600 level or above.
2. There is no language requirement for either of these professional degrees.

AGRICULTURAL ECONOMICS

Graduate Faculty: Professors Russell Brannon, Fred Justus, John Redmond, John Roberts, Robert Rudd (Chairman and Director of Graduate Studies), Milton Shuffett, Eldon Smith. Associate Professors Kurt Anshel, Robert Beck, Barry Bobst, Garnett Bradford.

Associate Members: Assistant Professors Bruce Beattie, Frank Bordeaux, Harry Hall, Loys Mather.

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

The beginning graduate student is advised to choose between two program emphases, applied or research, according to his career interests. The applied sequence trains the student broadly in subjects that will have a continuing usefulness in business, agricultural program administration, extension, foreign service and the like. The ap-

plied 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 Ph.D.-level work. 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. 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, and resource and economic development. In addition to taking courses in these areas within agricultural economics, the student may select courses from a broad array of agricultural and social science disciplines which will complement his particular professional career interest. A graduate student handbook is available which provides information on the department's graduate program and details the Ph.D. core curriculum and the recommended content of the two emphases in the Master's Degree program.

AGRICULTURAL MARKETING

- | | |
|---|-----|
| 401 <i>Marketing Tobacco.</i> | (2) |
| 402 <i>Tobacco Market Grades and Grading.</i> | (1) |
| 403 <i>Marketing Livestock and Livestock Products.</i> | (2) |
| 501 <i>Economics of Agricultural Marketing.</i> | (3) |
| 505 <i>Structure and Organization of Agricultural Businesses.</i> | (3) |
| 606 <i>Advanced Agricultural Marketing.</i> | (3) |

AGRICULTURAL POLICY AND LAND ECONOMICS

- | | |
|--|-----|
| 540 <i>Agricultural Policy.</i> | (3) |
| 545 <i>Land Economics.</i> | (3) |
| 640 <i>Advanced Agricultural Policy.</i> | (3) |

FARM MANAGEMENT

- 409 *Decision-making in Agricultural Business Firms.* (3)
 415 *Farm Accounting and Record Analysis.* (3)
 511 *Advanced Farm Management.* (3)
 516 *Land Value and Appraisal.* (3)
 518 *Farm Labor Utilization.* (3)

PRODUCTION ECONOMICS

- 520 *Production Economics.* (3)
 620 *Advanced Production Economics I.* (3)
 621 *Advanced Production Economics II.* (3)

AGRICULTURAL PRICES AND FINANCE

- 455 *Agricultural and Farm Finance.* (3)
 550 *Agricultural Prices.* (3)
 650 *Advanced Agricultural Prices.* (3)

ECONOMIC DEVELOPMENT

- 626 *Agriculture and Economic Development.* (3)

GENERAL AGRICULTURAL ECONOMICS COURSES

- 580 *Special Problems in Agricultural Economics.* (1-3)
 590 *Introduction to Mathematical Economics.* (3)
 660 *Research Methods in Agricultural Economics.* (3)
 661 *Programming Models in Agricultural Economics.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 770 *Agricultural Economic Seminars.* (0)
 780 *Special Problems in Agricultural Economics.* (1-3)

RESOURCE ECONOMICS

- 645 *Natural Resource Economics.* (3)

AGRONOMY

Graduate Faculty for Crop Science: Professors R. C. Buckner, W. G. Duncan, V. C. Finkner, N. L. Taylor (Director of Graduate Studies), T. H. Taylor, W. C. Templeton, G. T. Webster. Associate Professors G. B. Collins, D. L. Davis, M. J. Kasperbauer, D. Knavel, P. G. Legg, S. J. Sheen.

Associate Members: Assistant Professors M. K. Anderson, D. B. Egli, C. G. Poneleit, L. Thompson.

Graduate Faculty for Soil Science: Professors H. H. Bailey, D. E. Peaslee, R. E. Phillips (Director of Graduate Studies), W. G. Survant, G. W. Thomas. Associate Professors R. I. Barnhisel, J. L. Sims.

Graduate Faculty for Plant Physiology: Professors W. G. Duncan, A. J. Hiatt (Chairman of the Department of Agronomy and Director of Graduate Studies), J. E. Leggett. Associate Professors L. P. Bush, D. L. Davis, C. H. Grunwald, M. J. Kasperbauer, R. H. Lowe.

Associate Members: Assistant Professors D. B. Egli, L. Thompson.

The Department of Agronomy offers graduate work leading to the Master of Science and Doctor of Philosophy degrees with majors in Crop Science or Soil Science. Work leading to advanced degrees must conform to the general rules and regulations of the Graduate School, except that a reading knowledge of one modern foreign language is required for the Ph.D. degree. The department permits use of Plan A or Plan B to satisfy the requirements for the M.S. degree.

The Department of Agronomy also participates in an interdepartmental graduate program leading to the Ph.D. degree with a major in plant physiology.

GENERAL COURSES

- 400 *Senior Seminar.* (1)
 554 *Advanced Crop Science.* (3)
 556 *Seed Technology.* (3)
 560 *Soil-Plant Relationships.* (3)
 599 *Special Problems in Agronomy.* (1-4)
 620 *Genetic Structure of Populations.* (3)
 658 *Advanced Weed Science.* (3)
 666 *Advanced Plant Breeding.* (3)
 678 *Statistical Genetics.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 770 *Agronomy Seminar.* (1)
 799 *Research in Agronomy.* (1-4)

COURSES IN CROP SCIENCE

- 404 *Weed Science.* (3)
 406 *Plant Breeding.* (3)
 408 *Tobacco.* (3)
 412 *Grain Crops.* (3)
 502 *Ecology of Economic Plants.* (3)
 510 *Ecology and Utilization of Grasslands.* (4)
 630 *Experimental Techniques in Plant Physiology.* (3)
 730 *Grassland Research.* (3)
 732 *Mineral Nutrition of Plants.* (3)
 734 *Physiology of Growth and Development.* (3)
 736 *Phylogeny of Cultivated Plants.* (3)

COURSES IN SOIL SCIENCE

- 468 *Soil Conservation and Management.* (3)
 470 *Fertilizers and Soil Fertility.* (3)
 473 *Soil Morphology and Mapping.* (3)
 562 *Forest Soils.* (3)
 566 *Soil Biology.* (3)
 575 *Soil Physics.* (4)
 581 *Chemical Analysis of Soils and Plants.* (4)
 652 *Soil Classification and Geography.* (3)
 660 *Advanced Soil Biology.* (2)
 671 *Soil Chemistry.* (4)

- 675 *Advanced Soil Physics.* (3)
 681 *Mineralogical and Chemical Analysis of Soils.* (4)
 690 *Topics of Soil Chemistry.* (1-4)
 691 *Topics in Soil Mineralogy.* (1-4)
 712 *Advanced Soil Fertility.* (3)
 721 *Soil Genesis.* (3)
 741 *Clay Mineralogy.* (3)

COURSES IN BOTANY

(May be used for agricultural credit, subject to the approval of adviser).

- 501 *Plant Physiology.* (3-5)
 634 *Cytogenetics.* (4)
 701 *Plant Metabolism.* (3)

ANIMAL SCIENCES

Graduate Faculty: Professors Charles Barnhart, Neil Bradley, Ray Dutt, Wesley Garrigus (Chairman and Co-Director of Graduate Studies), Virgil Hays, Roger Hemken, Don Jacobson, James Kemp, Oran Little, Donald MacLaury, George Mitchell (Co-Director of Graduate Studies), Durward Olds, Patch Woolfolk. Associate Professors John Baker, John Begin, James Boling, Gary Cromwell, Donald Ely, Dal Kratzer, Bruce Langlois, William Moody, Frederick Thrift.

Associate Members: Assistant Professors Joe Fox, Robert Goodwill, Gerald Schelling, Ray Tucker.

The degrees of Master of Science, Master of Science in Agriculture and Doctor of Philosophy are available with majors in animal sciences. Masters' degrees are awarded under either Plan A or Plan B. Programs in the department are divided into the disciplinary areas of Animal Foods, Animal Nutrition, and Genetics and Physiology. Special interests in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, animal behavior, dairy technology and dairy microbiology may be pursued within these areas.

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

- 404 *Sheep Science.* (3)
 406 *Beef Cattle Science.* (3)
 408 *Swine Science.* (3)
 410 *Horse Sciences.* (3)
 412 *Advanced Horse Husbandry.* (3)
 420 *Dairy Cattle Science.* (2-3)
 436 *Dairy Processing and Plant Management.* (6)

- 442 *Poultry Science.* (3)
 460 *Animal Breeding.* (3)
 526 *Reproduction in Dairy Cattle.* (2)
 530 *Animal Food Microbiology.* (4)
 532 *Advanced Animal Food Microbiology.* (5)
 534 *Chemistry of Animal Products.* (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)
 682 *Nutrient Metabolism.* (5)
 683 *Protein Metabolism.* (2)
 684 *Advanced Ruminant Nutrition.* (3)
 685 *Mineral Metabolism.* (2)
 686 *Advanced Non-ruminant Nutrition.* (3)
 687 *Vitamin Metabolism.* (2)
 688 *Equine Nutrition.* (2)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 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)

ENTOMOLOGY

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

Associate Member: Assistant Professor Gerald Nordin.

The Department of Entomology offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees. Individual graduate programs are planned by the student in consultation with his adviser and the director of graduate study. 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, med-

ical and veterinary entomology, physiology, taxonomy, toxicology, and acarology. A reading knowledge of one modern foreign language is required for the Ph.D. degree.

- 402 *Forest Entomology*. (3)
- 500 *Economic Entomology*. (3)
- 530 *Insect Pest Management*. (3)
- 532 *Medical Entomology*. (4)
- 542 *Insect Taxonomy*. (4)
- 545 *Parasitology*. (4)
- 595 *Independent Work*. (2-3)
- 602 *Insect Morphology*. (4)
- 606 *Insect Toxicology*. (3)
- 610 *Insect Ecology and Behavior*. (3)
- 612 *Principles of Animal Systematics*. (3)
- 620 *General Acarology*. (4)
- 630 *Insect Physiology*. (4)
- 650 *Advanced Applied Entomology*. (3)
- 660 *Immature Insects*. (4)
- 670 *Experimental Methods in Entomology*. (4)
- 680 *Biological Control of Insects*. (3)
- 768 *Residence Credit for the Master's Degree*. (1-6)
- 769 *Residence Credit for the Doctor's Degree*. (1-12)
- 770 *Entomological Seminar*. (1)
- 780 *Special Problems in Entomology and Acarology*. (2-3)

FORESTRY

Graduate Faculty: Professors Thomas Hansbrough, Boyd Richards. Associate Professor Donald Hook.

Associate Members: Assistant Professors Ruen-Chiu Tang, Edwin White.

At present no graduate majors are offered in Forestry.

- 400 *Wood Identification and Properties*. (3)
- 402 *Forest Entomology*. (3)
- 405 *Mechanics and Physics of Wood*. (3)
- 410 *Forest Pathology*. (3)
- 412 *Forest Economics*. (3)
- 415 *Wood Seasoning and Preservation*. (3)
- 420 *Forest Products*. (3)
- 425 *Forest Photogrammetry*. (3)
- 430 *Forest Wildlife and Range Management*. (3)
- 435 *Forest Tree Physiology*. (3)
- 440 *Forest Resources for Recreation*. (3)
- 445 *Forest Fire; Control and Use*. (3)
- 450 *Senior Seminar in Forestry (Proseminar)*. (2)
- 460 *Forest Watershed Management*. (3)
- 512 *Forest Tree Physiology*. (3)
- 562 *Forest Soils*. (3)

HORTICULTURE

Graduate Faculty: Raymond Lockard (Director of Graduate Studies), Hubert Mohr, Ronald Phillips (Acting Chairman), William Schneider. Associate Professors Dean Knavel, Aly Lasheen, Leonard Stoltz.

Associate Member: Assistant Professor Thomas Kemp.

The Department of Horticulture offers graduate work leading to the Master of Science in Agriculture degree. Degrees are awarded primarily under Plan A, but they can be awarded under Plan B with prior approval. The study and research program may relate to Pomology, Vegetable Crops, Floriculture, Ornamentals or Landscape Horticulture. Research problems are normally related to the discipline of genetics, physiology or landscape design.

Students interested in working in horticulture toward a Doctor of Philosophy degree may enter the interdepartmental Plant Physiology or Crop Science programs.

- 402 *Pomology: Deciduous Fruits I*. (3)
- 440 *Landscape Construction*. (3)
- 502 *Pomology: Deciduous Fruits II*. (3)
- 510 *Vegetable Crops*. (3)
- 512 *Greenhouse Vegetable Crops*. (3)
- 515 *Turf Management*. (3)
- 522 *Landscape Planting Design*. (3)
- 524 *Floriculture II*. (3)
- 525 *Plant Propagation*. (3)
- 570 *Landscape Design of Park and Recreation Areas*. (3)
- 732 *Mineral Nutrition of Plants*. (3)
- 734 *Physiology of Growth and Development*. (3)
- 736 *Phylogeny of Cultivated Plants*. (3)
- 768 *Residence Credit for the Master's Degree*. (1-6)
- 770 *Seminar*. (1)
- 782 *Special Problems in Horticulture*. (1-4)
- 790 *Research in Horticulture*. (1-4)

PLANT PATHOLOGY

Graduate Faculty: Professors R. A. Chapman, Stephen Diachun (Chairman and Director of Graduate Studies), T. P. Pirone, Granville Stokes, H. Wheeler, A. S. Williams. Associate Professors J. W. Hendrix, J. G. Shaw, M. R. Siegel.

In the Department of Plant Pathology professors and graduate students are studying plant diseases, their causes and their control. Aspects of diseases being studied include pathotoxins, mycotoxins, fungal lipids, morphogenesis of

pathogens, genetics of pathogens, ecology of root pathogens, early events in virus infection, virus-vector relationships, inhibition of virus infection, reproduction and development of nematode populations, inter-relationships among species of plant parasitic nematodes, variability within a species of nematodes, mechanisms of fungicidal action and the metabolic fate of fungicides, genetics of host response, and cytological and physiological changes in infected plants.

Disease-resistant plants are being sought, identified, and selected in populations of tobacco, corn, and forage legumes and grasses; disease-resistant plants are being developed in cooperation with faculty members in the Departments of Agronomy and Horticulture.

Special instruments within the department include the following; centrifuges, ultra-centrifuges, spectrophotometers, electron microscope, microtomes, analytical balance, liquid scintillation counter, analytical ultra centrifuge, autoclaves and sterilizing equipment, autoanalyzers, Clark oxygen electrode apparatus, counter-current distribution apparatus, electrophoresis apparatus, fluorometer, freeze-dry apparatus, incubators, Geiger-Meuller counters, micromanipulators, chromatography equipment, particle counter, phase microscopes, microscopes, pH meters, respirometers, tissue culture facilities, photomicrography and darkroom facilities.

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.

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| 410 Forest Pathology. | (3) |
| 541 Plant Pathology. | (3) |
| 543 Diseases of Plants. | (3) |
| 545 Epidemiology and Control of Plant Diseases. | (3) |
| 558 Nematode Diseases of Plants. | (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. | (14) |
| 769 Residence Credit for the Doctor's Degree. (In Biological Science) | (1-12) |
| 770 Plant Pathology Seminar. | (1) |
| 784 Special Problems in Plant Pathology. | (13) |
| 794 Research in Plant Pathology. | (14) |

VETERINARY SCIENCE

Graduate Faculty: Professors John Bryans (Director of Graduate Studies), J. H. Drudge (Chairman), W. H. McCollum. Associate Professors E. T. Lyons, M. E. Prickett. Assistant Professors D. D. Harrington, D. O. Morgan, T. W. Swerczek.

The Department of Veterinary Science offers a program of study and research leading to the Doctor of Philosophy degree with majors in comparative pathology, virology, immunology, and parasitology. The program is designed primarily for students who possess the Doctor of Veterinary Medicine degree. Individuals electing pathology as a major area must be graduate veterinarians. Candidates without a D.V.M. degree may be admitted to study in the other areas of concentration with faculty approval. 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.

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| 769 Residence Credit for the Doctor's Degree. | (1-12) |
| 770 Veterinary Science Seminar. | (1) |
| 781 Correlative Pathology. | (1-3) |
| 782 Nutritional Pathology. | (3) |
| 783 Infectious Diseases of Domestic Animals. | (3) |
| 784 Advanced Veterinary Immunology. | (2) |
| 785 Advanced Veterinary Parasitology. | (3) |
| 786 Advanced Veterinary Pathology. | (3) |
| 787 Advanced Veterinary Pathology. | (3) |
| 791 Research in Veterinary Microbiology. | (1-9) |
| 792 Research in General Veterinary Pathology. | (1-9) |
| 793 Research in Veterinary Parasitology. | (1-9) |
| 794 Research in Nutritional Pathology. | (1-9) |

Allied Health Professions

ALLIED HEALTH EDUCATION AND RESEARCH

The Department of Allied Health Education and Research serves as both the repository for and the designer of innovative curricula and experimental programs for the College of Allied Health Professions.

Its faculty, representing a broad spectrum of interests and resources, serves as consultants for our many and diverse interests.

If any place in the College could be designated as a "think tank" for Allied Health Development and planning, this would be it.

660 <i>Advanced Clinical Practicum in Allied Health.</i>	(1-6)
670 <i>Advanced Seminar in Allied Health.</i>	(1-3)
690 <i>Research Problems in Allied Health.</i>	(3)
EDH 500 <i>Clinical and Laboratory Teaching.</i>	(4)
EDH 501 <i>Teaching Internship.</i>	(6-12)

CLINICAL NUTRITION

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

Associate Member: Professor Joe Sills.

The Master's Degree Program in Clinical Nutrition provides an opportunity for graduate study in the fundamentals of Clinical Nutrition. 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	II
CNU 780, 781, 782	Independent Study	1 ea. I, II, S	
		10	

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	Biochemistry for Dental Students	3	I
CNU 502	Principles of Human Physiology, same as PGY 810	5	II
MB 610	Bacteriology of Foods	4	I
BSC 772	Topical Seminar in Medical Behavioral Science	1-3	II
SOC 532	Intergroup Relations	3	I, S
EDF 661	Educational Sociology	3	
EDP 548	Educational Psychology	3	I, II, S
EDC 607	Programmed Instruction in the Classroom	3	
Elective		3	

502	<i>Principles of Human Physiology.</i>	(5)
601	<i>Clinical Nutrition.</i>	(4)
602	<i>Current Trends in Nutrition.</i>	(1)
701	<i>Advanced Clinical Nutrition.</i>	(2)
768	<i>Residence Credit for the Master's Degree in Clinical Nutrition.</i>	(1-6)
CNU 780, 781, 782	<i>Independent Study.</i>	(1 ea.)
CM 601	<i>Principles of Nutrition in Population Groups.</i>	(2)

CLINICAL PASTORAL COUNSELING

At present there is no graduate program in this area.

501	<i>Perspectives in Religion and Health.</i>	(3)
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COMMUNITY HEALTH

Graduate Faculty: Associate Professor Wilbur Heinz.

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

420 <i>Current Issues in Community Health Education.</i>	(3)
481 <i>Community Health Practice.</i>	(4-8)
500 <i>Public Health Sanitation.</i>	(3)
501 <i>Public Health.</i>	(3)
511 <i>Independent Study in Community Health.</i>	(1-3)
515 <i>Communicable Diseases.</i>	(3)
520 <i>Mental Hygiene.</i>	(3)
521 <i>Community Health.</i>	(3)
522 <i>School and Community Health.</i>	(2)
600 <i>Epidemiology.</i>	(3)
603 <i>Public Health Records.</i>	(2)
604 <i>Maternal and Child Health.</i>	(2)
612 <i>Public Health Administration.</i>	(3)
613 <i>Public Health Administration.</i>	(2)
618 <i>Vital Statistics.</i>	(3)
619 <i>Vital Statistics.</i>	(2)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
770 <i>Seminar.</i>	(1)
841 <i>Community Health Clerkship.</i>	(3)

HEALTH RADIATION SCIENCES

Graduate Faculty:* Professor Yosh Maruyama. Associate Professor Joseph Sayeg (Director of Graduate Studies).

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

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

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

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

CORE PROGRAM

ZOO 540 <i>General Radiation Biology.</i>	(4)
ZOO 640 <i>Biological Effects of Radiation.</i>	(3)
PHY 472 <i>Interaction of Radiation with Matter.</i>	(3)
PHY 535 <i>Experimental Physics, Atomic and Nuclear.</i>	(2)
RM 545 <i>Radiation Hazards and Protection.</i>	(2)
HRS 710 <i>Seminar in Bioradiation Science.</i>	(1)
STA 670 <i>Basic Statistical Analysis.</i>	(4)
690 <i>Research in Radiological Health.</i>	(1-3)
695 <i>Research in Radiation Dosimetry.</i>	(1-3)
710 <i>Seminar in Bioradiation Sciences.</i>	(1)
715 <i>Advanced Problems in Radiation Dosimetry.</i>	(2-6)
720 <i>Advanced Problems in Radiological Health.</i>	(2-4)
	19

Master of Science in Radiological Health Specialty

ADDITIONAL PROGRAM

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

A practicum in Radiological Health will also be required which will consist of approximately 12 weeks of training at, (1) a hospital, (2) a government regulatory agency and, (3) a national laboratory. This will be offered during the summer months after the course work has been completed. No credit hours.

Total 32 (minimum)

Master of Science in Medical Radiation Dosimetry

ADDITIONAL PROGRAM

ANA 511 <i>Introduction to Anatomy.</i>	(4)
PGY 502 <i>Principles of Physiology Lectures.</i>	(3)
HRS 715 <i>Advanced Problems in Radiation Dosimetry.</i>	(2-6)
<i>Area Electives.</i>	(2-5)
	Total 31 (minimum)

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

Arts and Sciences

ANTHROPOLOGY

Graduate Faculty: Professors William Adams, Philip Drucker, Art Gallaher, Jr., Margaret Landis, Marion Pearsall. Associate Professors Lathel Duffield (Chairman and Director of Graduate Studies), Donald Hochstrasser.

Associate Members: Assistant Professors Albert Bacdayan, Robert Biggerstaff, Anthony Colson, Michael Everett.

The Department of Anthropology offers courses and research options leading to the Ph.D. degree in the special areas of Ethnology, Culture History (Ethno-history and Archaeology), and Applied Social Anthropology. The department also offers the M.A., a general degree certifying a broad background in anthropology, plus research competence in the collection and processing of primary data.

All incoming graduate students without the M.A. in anthropology are treated initially as candidates for this degree, and are expected to take the M.A. comprehensive examination. Students who pass this examination with a high score, and who demonstrate satisfactory research competence, may petition to by-pass the master's thesis. A reading knowledge of one modern foreign language is required for the M.A. degree in anthropology, and a reading knowledge of two is required for the Ph.D.

The following areas are represented in the individual research experience of the anthropology faculty: Southeast Asia, Latin America, Oceania, North Africa, Europe, and North America, including strong competence in rural English-speaking subcultures.

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. 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

and three letters of recommendation. Contact the Chairman, Admissions Committee, Department of Anthropology for additional information on departmental requirements and opportunities for financial assistance.

- 402 *Human Identification.* (2)
- 428 *Contemporary Cultures and Societies in Southeast Asia* (3)
- 438 *Ethnology of the Near East and North Africa.* (3)
- 439 *Circumpolar Peoples.* (3)
- 442 *New World Prehistory.* (3)
- 490 *Pre-Field Study Seminar.* (3)
- 500 *Physical Anthropology.* (4)
- 510 *History of Anthropological Theory.* (3)
- 512 *Comparative Civilizations.* (3)
- 514 *Descriptive Linguistics: Phonetics.* (3)
- 515 *Descriptive Linguistics: Phonemics.* (3)
- 516 *Descriptive Linguistics: Morphemics.* (3)
- 518 *Language in Culture.* (3)
- 521 *Ethnology of the New World.* (3)
- 522 *North Pacific Coast Cultures.* (3)
- 523 *Ethnology of Oceania.* (3)
- 524 *Mythology.* (3)
- 525 *Applied Anthropology.* (3)
- 526 *Culture and Personality.* (3)
- 527 *Culture Change.* (3)
- 529 *Survey of Medical Anthropology.* (3)
- 530 *Contemporary Latin American Cultures.* (3)
- 531 *Cultures and Societies of Sub-Saharan Africa.* (3)
- 533 *Social Anthropology.* (3)
- 534 *The Southern Appalachians: A Sociological Interpretation.* (3)
- 536 *European Peasantries.* (3)
- 541 *Archaeological Theory and Method.* (3)
- 542 *North American Archaeology.* (3)
- 546 *Prehistoric Meso-America and Peru.* (3)
- 547 *Cultures of the Southwestern United States.* (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)
- 561 *Anthropology: Man and His Works.* (3)
- 575 *Prehistory of Eastern Asia.* (3)
- 581 *Independent Work in Anthropology.* (1-4)
- 582 *Tutorial Seminar.* (2)
- 585 *Field Laboratory in Archaeological Research.* (3-6)
- 601 *Proseminar in Anthropology.* (3)

- 602 *Contemporary Anthropological Theory Seminar.* (3)
 610 *History of Anthropology.* (3)
 614 *Field Methods in Linguistics.* (3)
 641 *Middle and South America Seminar.* (3)
 648 *Seminar on Southeast Asian Cultures and Societies.* (3)
 658 *Seminar on African Societies.* (3)
 661 *Seminar on Near Eastern Cultures.* (3)
 670 *Seminar on Role Theory.* (3)
 690 *Advanced Pre-Field Study Seminar.* (3)
 727 *Seminar on Socio-Cultural Change.* (3)
 730 *Seminar in Comparative Religious Systems.* (2)
 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)
 769 *Residence Credit for the Doctor's Degree* (1-12)
 770 *Seminar.* (2)
 790 *Research Problems in Anthropology.* (3)

ART

Graduate Faculty: Professors James Pierce (Chairman and Director of Graduate Studies), Clifford Amyx. Associate Professors Ronald Benson, Gerald Yerstman, Elizabeth Finkenstaedt, Deborah Frederick, William Geis, Lowell Jones, John Tuska.

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

Students admitted to the program in art history are expected to have completed course work equivalent to an undergraduate major in art history. 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' work, completion of the thesis and the language requirement. It is required that the student offer either course work or substantial proof of ability to use more than one foreign language.

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

Requirements for the Degree of Master of Fine Arts

Application for admission to graduate work leading to the degree, Master of Fine Arts, must be accompanied by a portfolio of creative work or photographs, or transparencies of such work. 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 his major area, with the advice of a senior professor, at the outset of his graduate work and will carry at least 12 hours in that area under the guidance of one professor selected as thesis adviser. Up to nine hours in relevant work outside the department may be elected by the student in consultation with his 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 COURSE

- 768 *Residence Credit for the Master's Degree.* (1-6)

ART EDUCATION

- 575 *Art in Elementary Schools* (3)
 577 *Art in Secondary Schools.* (3)
 579 *Seminar in Art Education* (2)
 670 *School and Community Art.* (3)

ART-HISTORY

- 505 *Roman Art: 5th Century BC to 4th Century AD.* (3)

- 506 *Greek Art.* (3)
 530 *Medieval Art of Italy and Sicily.* (3)
 550 *Italian Renaissance Painting: 1350-1550.* (3)
 551 *Italian Renaissance Architecture: 15th and 16th Centuries.* (3)
 555 *Italian Renaissance Sculpture.* (3)
 565 *Roman Baroque Art.* (3)
 570 *19th Century Architecture: Neo-Classicism to the Chicago School.* (3)
 576 *Art in America.* (2)
 580 *French Painting: The Nineteenth Century.* (3)
 590 *The History of Western Graphic Arts.* (3)
 591 *Seminar in Art History.* (2)
 592 *Aesthetics.* (3)
 593 *Seminar in Art.* (1)
 594 *Criticism of Art.* (3)
 599 *Independent Work: Art History.* (3)
 600 *Studies in Ancient Art.* (3)
 630 *Studies in Medieval Art.* (3)
 650 *Studies in Italian Renaissance Art.* (3)
 670 *Studies in Modern Art.* (3)
 779 *Independent Work: Art History.* (3)

ART-STUDIO

- 502 *Advanced Drawing.* (3)
 510 *Advanced Painting.* (3)
 525 *Advanced Printmaking.* (3)
 540 *Textiles: Advanced Weaving.* (3)
 555 *Advanced Casting.* (3)
 560 *Advanced Welding.* (3)
 565 *Advanced Wood Sculpture.* (3)
 570 *Theory of Glazes and Refractories.* (3)
 571 *Advanced Problems in Ceramics.* (3)
 595 *Independent Work: Painting, Printmaking.* (3)
 596 *Workshop.* (1-6)
 597 *Independent Work: Advanced Sculpture and Other Three-Dimensional Media.* (3)
 610 *Traditional and Experimental Media in Painting.* (3)
 767 *M.F.A. Studio Thesis Project.* (1-6)
 793 *Graduate Studio Seminar.* (1)
 798 *Problems in Sculpture, Ceramics and Design.* (3)
 799 *Problems in Painting and Printmaking.* (3)

Thomas Hunt Morgan School of Biological Sciences

Graduate Faculty: Professors M. I. H. Aleem, Roger Barbour, Thomas Barr, John Carpenter, Samuel Conti (Director), Wayne Davis, James Humphries, Herbert Riley, Isaac Ruchman, Earle

Swim, Ralph Weaver, Ralph Wiseman. Associate Professors Wesley Birge, John Calkins, Eugene Crawford, James Edney, Ogden Edwards, Denny Harris, Robert Kuehne, Thomas Leonard, Nicholas Pisacano, P. S. Sabharwal, Willem Meijer.

Associate Members: Assistant Professors Jerry Baskin, James Eley, Jr., Thomas Gray, Mohammad Hafeez, John Just.

The Thomas Hunt Morgan School of Biological Sciences provides a program in biology leading to the degree of Doctor of Philosophy. The program draws upon the various courses and faculty members in the biological sciences. The purpose of this graduate program 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. Only one modern foreign language is required.

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

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

Laboratory facilities and equipment are excellent for doctoral work in all branches of biology. A very good biology library containing over 15,000 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.

Additional graduate programs offered within the Thomas Hunt Morgan School of Biological Sciences are Master of Arts or Science Degree

programs in Botany and Zoology, and a Master of Science and Ph.D. program in Microbiology. Faculty within the School also are active participants in several other graduate programs including the University-wide graduate program in Plant Physiology.

BIOLOGY

404 <i>Principles of Genetics.</i>	(3)
450 <i>Introductory Ecology.</i>	(4)
515 <i>General Cell Biology.</i>	(3)
620 <i>Genetic Structure of Populations.</i>	(3)
630 <i>Experimental Techniques in Plant Physiology.</i>	(3)
678 <i>Statistical Genetics.</i>	(3)
760 <i>Developmental Genetics.</i>	(3)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
769 <i>Residence Credit for the Doctor's Degree</i>	(1-12)
770 <i>Seminar in Genetics.</i>	(1)
771 <i>Seminar in Plant Physiology.</i>	(1)

BOTANY

Graduates of accredited colleges with a bachelor's degree in Botany or Biological Sciences who satisfy the requirements of the graduate school may apply for admission to the graduate program for work leading to degrees of Master of Science or Master of Arts in Botany, or a Doctor of Philosophy in Biology (see Thomas Hunt Morgan School of Biological Sciences). Plan A is ordinarily required for the master's degree but Plan B is permitted under certain circumstances. Two semesters of a limited, but meaningful teaching experience are required of all degree candidates. The teaching experience is designed to complement the formal studies and the precise nature of this experience is subject to approval by the student.

A reading knowledge of one foreign language is required for the master's degree.

Fields of study within the program include algology, plant anatomy, cytology, morphogenesis, mycology, plant ecology, plant physiology and systematics.

400 <i>Fundamentals of Biology for Secondary School Teachers.</i>	(4)
402 <i>Advanced Topics in Biology for Secondary School Teachers.</i>	(4)
403 <i>Economic Botany.</i>	(3)
501 <i>Plant Physiology.</i>	(3-5)
506 <i>Special Problems.</i>	(1-3)
507 <i>Algology.</i>	(4)

513 <i>Plant Autecology.</i>	(4)
515 <i>Seminar.</i>	(1)
521 <i>Anatomy of Vascular Plants.</i>	(4)
524 <i>Mycology.</i>	(4)
528 <i>Plant Cytology.</i>	(4)
530 <i>Introduction to Heredity.</i>	(3)
541 <i>Plant Pathology.</i>	(3)
551 <i>Taxonomy of Vascular Plants.</i>	(4)
560 <i>Plant Microtechnique.</i>	(3)
600 <i>Plant Morphogenesis.</i>	(5)
620 <i>Topics in Modern Botany.</i>	(1-3)
626 <i>Experimental Mycology.</i>	(4)
634 <i>Cytogenetics.</i>	(4)
701 <i>Plant Metabolism.</i>	(3)
732 <i>Mineral Nutrition of Plants.</i>	(3)
734 <i>Physiology of Growth and Development.</i>	(3)
735 <i>Biosystematics.</i>	(3)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
769 <i>Residence Credit for the Doctor's Degree</i>	(1-12)
770 <i>Seminar.</i>	(1)
790 <i>Research in Botany.</i>	(1-6)

MICROBIOLOGY

The graduate program in Microbiology offers the Master of Science degree in the various fields of morphology and physiology of microorganisms, immunology and serology, and medical and public health microbiology. Areas of research specialization include Microbial Biochemistry and Bioenergetics, Virology, Ecology, Microbial Genetics, Taxonomy, Gnotobiotics (germ-free animal research), and Microbial Ultrastructure. A minimum of one foreign language is required for Ph.D. candidates.

Plan B is permitted with departmental approval. All graduate students including those under Plan B are required to engage in graduate-level research. A reading knowledge of one foreign language is required for the master's degree.

400 <i>General Bacteriology.</i>	(4)
410 <i>Applied Bacteriology.</i>	(2)
500 <i>Pathogenic Bacteriology.</i>	(4)
512 <i>Growth and Death of Bacteria.</i>	(4)
520 <i>Metabolism of Microorganisms.</i>	(4)
550 <i>Immunology and Serology.</i>	(5)
610 <i>Bacteriology of Foods.</i>	(4)
620 <i>Bacteriology of Water and Sewage.</i>	(4)
660 <i>Electron Microscopy.</i>	(3)
670 <i>Viruses and Rickettsiae.</i>	(4)
700 <i>History of Bacteriology.</i>	(2)
712 <i>Bacterial Anatomy, Taxonomy and Nomenclature.</i>	(3)

- 714 *Microbial Genetics.* (4)
 722 *Metabolism of Microorganisms.* (4)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree* (1-12)
 770 *Seminar.* (0-1)
 790 *Research in Bacteriology.* (3-6)
 795 *Research in Bacteriology.* (3-6)

PLANT PHYSIOLOGY

The interdepartmental graduate program in Plant Physiology offers a plan of study leading to the degree of Doctor of Philosophy. 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 Department of Agronomy, Horticulture and Plant Pathology in the College of Agriculture. Course offerings in plant physiology are listed under the Departments of Agronomy, Horticulture, Plant Pathology, and the Thomas Hunt Morgan School of Biological Sciences. Work 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, normally German, Russian, or French. A formal minor is not required. Contact the Director, N-212F, Agricultural Science Center for additional information.

- BIO 630 *Experimental Techniques in Plant Physiology.* (3)
 BIO 768 *Residence Credit for the Master's Degree.* (1-6)
 BIO 769 *Residence Credit for the Doctor's Degree.* (1-12)
 BIO 771 *Seminar in Plant Physiology.* (1)

ZOOLOGY

Graduates of accredited colleges with a bachelor's degree in Zoology or Biological Sciences who satisfy the requirements of the graduate school may apply for admission to the graduate program for work leading to degrees of Master of Science or Master of Arts in Zoology according to Plan A or Plan B or a Doctor of Philosophy in Biology. (See the Thomas Hunt Morgan School of Biological Sciences.) Almost all fields of study encompassed by Zoology are available to students in the program.

A reading knowledge of one foreign language is required for the master's degree.

- 400 *Fundamentals of Biology for Secondary School Teachers.* (4)

- 402 *Advanced Topics in Biology for Secondary School Teachers.* (4)
 502 *Principles of Physiology Lectures.* (4)
 503 *Experimental Methods.* (2)
 504 *Heredity.* (4)
 506 *Embryology.* (5)
 508 *Evolution.* (3)
 509 *Zoology Seminar.* (1)
 510 *Independent Work.* (3)
 512 *Physiology of Development.* (3)
 513 *General Histology.* (4)
 521 *Limnology.* (4)
 528 *General Entomology.* (4)
 530 *Vertebrate Zoology.* (4)
 532 *Medical Entomology.* (4)
 540 *General Radiation Biology.* (4)
 542 *Insect Taxonomy.* (4)
 544 *Protozoology.* (4)
 545 *Parasitology.* (4)
 546 *Helminthology.* (4)
 547 *Ichthyology.* (4)
 548 *Herpetology.* (4)
 549 *Ornithology.* (4)
 550 *Comparative Physiology.* (5)
 551 *Mammalogy.* (4)
 560 *Embryology and Morphology of Vertebrates.* (3)
 561 *Laboratory Studies of the Embryology and Morphology of Vertebrates.* (2)
 562 *Embryology and Morphology of Vertebrates.* (3)
 563 *Laboratory Studies of the Embryology and Morphology of Vertebrates.* (2)
 570 *Invertebrate Zoology.* (4)
 602 *Insect Morphology.* (4)
 604 *Advanced Animal Ecology.* (3)
 610 *Insect Ecology and Behavior.* (3)
 611 *Speciation.* (3)
 612 *Principles of Animal Systematics.* (3)
 615 *Seminar in Animal Navigation.* (2)
 617 *Advanced Microtechnique.* (3)
 620 *General Acarology.* (4)
 630 *Insect Physiology.* (4)
 640 *Biological Effects of Radiation.* (3)
 642 *Vertebrate Natural History.* (4)
 660 *Special Topics in Endocrinology.* (2)
 709 *Graduate Seminar in Zoology.* (1)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree* (1-12)
 790 *Research in Zoology.* (1-6)

CHEMICAL PHYSICS

Director of Graduate Study—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. Students and faculty frequently meet for informal seminars in chemical physics, encouraging exchange of information in the following research components of the chemical physics program: atomic and molecular theory, atomic and molecular processes, solid state theory and experiments, surface state physics, X-ray crystallography, and mass spectroscopy. Course offerings in chemistry and in physics, including the special offerings in chemical physics (CHE 755 or PHY 755, Topics in Chemical Physics) are listed under the Department of Chemistry and the Department of Physics and Astronomy.

CHEMISTRY

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

The Department of Chemistry offers the Master of Science and the Doctor of Philosophy degrees. Normally only Plan A is accepted for the Master of Science 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. and Ph.D. degrees. For the Ph.D. degree a satisfactory reading knowledge of an additional foreign language such as French or Russian is required.

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.

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|---|---------|
| 440 <i>Physical Chemistry.</i> | (3) |
| 441 <i>Physical Chemistry Laboratory.</i> | (2) |
| 442 <i>Physical Chemistry.</i> | (3) |
| 443 <i>Physical Chemistry Laboratory.</i> | (3) |
| 444 <i>Physical Chemistry.</i> | (3) |
| 510 <i>Advanced Inorganic Chemistry.</i> | (3) |
| 512 <i>Inorganic Chemistry Laboratory.</i> | (3) |
| 520 <i>Radiochemistry.</i> | (3) |
| 522 <i>Instrumental Analysis.</i> | (4) |
| 532 <i>Qualitative Organic Analysis.</i> | (3) |
| 538 <i>Principles of Organic Chemistry.</i> | (3) |
| 547 <i>Advanced Physical Chemistry I.</i> | (3) |
| 548 <i>Advanced Physical Chemistry II.</i> | (3) |
| 550 <i>Physiological Chemistry.</i> | (4) |
| 552 <i>Physiological Chemistry.</i> | (4) |
| 572 <i>Seminar.</i> | (1) |
| 580 <i>Topics in Chemistry.</i> | (2) |
| 582 <i>Chemical Literature.</i> | (1) |
| 610 <i>Chemistry of the Transition Metals.</i> | (3) |
| 612 <i>Inorganic Chemistry of the Non-Metals.</i> | (3) |
| 616 <i>Nuclear Chemistry.</i> | (3) |
| 625 <i>Optical Methods of Analysis.</i> | (3) |
| 626 <i>Advanced Analytical Chemistry.</i> | (3) |
| 633, 635 <i>Advanced Organic Chemistry.</i> | (3 ea.) |
| 640 <i>Electrochemistry.</i> | (2) |
| 645 <i>Chemical Thermodynamics.</i> | (3) |
| 646 <i>Chemical Kinetics.</i> | (3) |
| 647 <i>Quantum Chemistry.</i> | (3) |
| 710 <i>Topics in Inorganic Chemistry.</i> | (2-4) |
| 714 <i>Non-Aqueous Solutions.</i> | (2) |
| 720 <i>Electrochemical Methods of Analysis.</i> | (3) |
| 726 <i>Topics in Analytical Chemistry.</i> | (1-3) |
| 736 <i>Topics in Organic Chemistry.</i> | (2-4) |
| 743 <i>Molecular Structure.</i> | (3) |
| 744 <i>Statistical Thermodynamics.</i> | (3) |
| 746 <i>Topics in Physical Chemistry.</i> | (2-4) |
| 747 <i>Advanced Quantum Chemistry.</i> | (3) |
| 755 <i>Topics in Chemical Physics</i>
(Subtitle required). | (3) |
| 768 <i>Residence Credit for the Master's Degree.</i> | (1-6) |

- 769 *Residence Credit for the Doctor's Degree* (1-12)
 776 *Graduate Seminar*. (1)
 780 *Individual Work in Chemistry*. (1-5)
 790 *Research in Chemistry*. (1-5)

CLASSICAL LANGUAGES AND LITERATURES

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

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 a reading knowledge of a modern foreign language. Most students complete their M.A. program in an academic year and a summer.

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

LATIN

- 425 *Latin Literature in Translation*. (3)
 501 *Lucretius and Epicureanism*. (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.)
 530 *The Teaching of Latin*. (3)
 603 *Studies in Latin Literature of the Republic*. (3)
 604 *Studies in Latin Literature of the Empire*. (3)

GREEK

- 424 *Greek Literature in Translation*. (3)
 500 *Latin 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 GENERAL

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

COMMUNICATIONS

Graduate Faculty: Professors Robert Bostrom, Lewis Donohew, Robert Murphy (Chairman and Director of Graduate Studies), Joseph Ripley, Bruce Westley. Associate Professors Barnett Pearce, Dwight Teeter.

Associate Members: Assistant Professors John Baseheart, James Fletcher, Leonard Tipton.

The School offers a program leading to the Master of Arts degree which is designed to serve the needs of students with varied goals and backgrounds. Goals may include teaching, research, professional work on the media, or a combination of these. The program is open to students with previous work in journalism, radio-television-films, speech, or other academic areas. Students with no previous work in a communications area will be required to take from five to ten hours of undergraduate work without graduate credit.

From 15 to 24 of the required hours of graduate credit will be taken in communications courses. A minimum of 12 credits in 600 level or higher communications courses, including CMO 651 and CMO 665, are required.

Students can elect, with approval of their adviser, to work under Plan A or Plan B as described in this bulletin. Plan A consists of 24 hours of course work plus a thesis. Included are 12 hours of communications core work and related courses in communications and other areas of the University. Students electing to follow Plan B take 30 hours of course work consisting of 12 hours of communications core, plus three to twelve hours of communications options and six to fifteen hours of options in another area of the University. Eighteen of the minimum 30 credits must be in 600 level or higher courses.

Near the end of their last semester students who follow Plan A will take an oral comprehensive examination covering their course work and their thesis. Students who follow Plan B will take a written comprehensive examination followed by an oral.

COMMUNICATIONS

- 550 *Introduction to Communications Research.* (3)
- 551 *The Communications Process.* (3)
- 553 *Mass Communication and Social Issues.* (3)
- 554 *Seminar in Communications.* (2)
- 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)
- 651 *Communications Theory.* (3)
- 665 *Communications Research Methods.* (3)
- 705 *Seminar: Information Sciences.* (3)
- 721 *Seminar in Interpersonal Communication.* (3)
- 730 *Seminar in Mass Media and Public Policy.* (2)
- 731 *Seminar in Interpersonal Communication.* (3)
- 741 *Seminar in Multi-Actional Communication.* (3)
- 781 *Directed Study in Communication.* (1-6)

JOURNALISM

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

SPEECH

- 500 *Speech Analysis and Perception.* (3)
- 581 *Communication Processes in Discussion.* (3)
- 582 *Persuasion.* (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)

TELECOMMUNICATIONS

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

COMPUTER SCIENCE

Graduate Faculty: Professors Thaddeaus Curtz (Chairman), A. C. R. Newberry, Henry Thacher, Jr. Associate Professors Ronald Alter (Director of Graduate Studies), Garth Olde.

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

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

- An assembly language programming course.
- A course in discrete mathematics or data structures.
- A course in linear algebra.
- A course in logic or logical design.
- A course in numerical analysis.
- A course in probability or statistics.

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

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

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

401	<i>Computer Applications to Allied Health Education.</i>	(3)
420	<i>Algorithmic Languages and Compilers.</i>	(3)
421	<i>Elementary Numerical Analysis.</i>	(3)
440	<i>Data Structures.</i>	(3)
445	<i>Computing and the Humanities.</i>	(3)
450	<i>Introduction to Coding Theory.</i>	(3)
472	<i>Seminar.</i>	(2)
482	<i>Discrete Methods and Models in Applied Mathematics.</i>	(3)
510	<i>Discrete Computer Mathematics I.</i>	(3)
525	<i>Analog and Hybrid Computer Techniques.</i>	(3)
530	<i>Computational Methods.</i>	(3)
538	<i>Elementary Numerical Analysis.</i>	(3)
540	<i>Systems Simulation.</i>	(3)
541	<i>Advanced Compiler Design I.</i>	(3)
560	<i>Non-Numerical Applications of Computers.</i>	(3)
570	<i>Computers and Programming Systems.</i>	(3)
575	<i>Formal Language Theory.</i>	(3)
605	<i>Advanced Information Processing.</i>	(3)
611	<i>Discrete Computer Mathematics II.</i>	(3)
612	<i>Independent Work in Computer Science.</i>	(1-3)
620	<i>Numerical Approximation and Curve-Fitting.</i>	(3)
630	<i>Numerical Evaluation of Transcendental Functions.</i>	(3)
631	<i>Error Analysis and Certification.</i>	(3)
641	<i>Advanced Compiler Design.</i>	(3)
680	<i>Seminar in Computer Science.</i>	(2)
685	<i>Special Topics in Computer Science.</i>	(3)
690	<i>Advanced Programming Systems I.</i>	(3)
691	<i>Advanced Programming Systems II.</i>	(3)
768	<i>Residence Credit for the Master's Degree.</i>	(1-6)

DIPLOMACY AND INTERNATIONAL COMMERCE

Director of the Patterson School—
Vincent Davis

The Patterson School of Diplomacy and International Commerce offers an interdisciplinary

master's degree and serves in an advisory capacity with respect to the Ph.D. programs in international studies within the four departments primarily related to the Patterson School. Those 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. 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 his 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 his 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 his work in a specific geographical area such as Latin America, Asia, Europe, etc., or prepare himself 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 Study.

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 mem-

bers, allow the substitution of another research skill (such as statistics, other methodologies or relevant techniques) in lieu of the language requirement, with adequate competence to be determined by procedures established by the Director.

Students planning to continue their studies beyond the M.A. may apply for admission to one of the appropriate Ph.D. programs at the University of Kentucky (or elsewhere). If at the University of Kentucky, the most likely departmental doctoral programs include those in Political Science, History, International Economics and Economic Development, and International Business and Commerce. These doctoral programs are fully described under the appropriate headings elsewhere in this **Bulletin**. However, since the doctoral programs have their own varying requirements, it is to be expected that in many cases the Patterson School's interdisciplinary M.A. will require that the student take longer to complete his course work for the Ph.D. than if he had enrolled 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 early 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 assistance 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 procedure. In addition, the Director of the Patterson School encourages each applicant to submit a brief statement (two or three pages, at most) to the Director explaining his or her spe-

cial interest in the Patterson School program in terms of his or her career goals, and further encourages each applicant to request three academic letters of reference to be mailed directly to the Director of the Patterson School.

768 *Residence Credit for the Master's Degree.* (1-6)

769 *Residence Credit for the Doctor's Degree* (1-12)

ENGLISH

Graduate Faculty: Professors Joseph Bryant, Arthur Cooke, Guy Davenport, Robert Evans, Stephen Manning (Chairman), Donald Ringe (Director of Graduate Studies), Thomas Stroup, William Ward. Associate Professors Thomas Blues, John Cutler, Lee Elioseff, Joseph Gardner, William Gordon, Joan Hartwig, William Jansen, Jerome Meckier. Assistant Professor William Campbell.

Associate Members: Assistant Professors Walter Herbert, Joan Blythe.

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

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

(2) fulfilled the admission requirements of the Graduate School. An applicant who fails to meet the first qualification may be admitted with the understanding that his 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.

Each student will be evaluated on his merits before he is officially admitted to the doctoral program by the English graduate faculty. Students who receive their master's degrees from the University of Kentucky will be judged on their course grades, on the recommendations of their instructors, their Graduate Record Examination scores, and their performance in a diagnostic preliminary examination. Students who have received their master's degrees 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, GRE scores, and performance in the preliminary examination.

There is no specific requirement in a minor

area, but such work may be required by a student's Special Committee if it appears to be essential to the major research or concentration interest. A Ph.D. candidate normally offers German and French for his language requirement, but substitutions may be authorized according to the procedure described in this bulletin.

A detailed statement of departmental requirements is available on request.

- 414 *Introduction to Modern English Linguistics.* (3)
- 421 *Chaucer.* (3)
- 425 *Shakespeare Survey.* (3)
- 428 *Milton.* (3)
- 440 *The English Novel I.* (3)
- 441 *The English Novel II.* (3)
- 442 *The English Novel III.* (3)
- 454 *American Novel Before 1900.* (3)
- 455 *Modern American Novel.* (3)
- 473 *General Introduction to Folklore.* (3)
- 474 *American Folklore.* (3)
- 490 *English Drama I.* (3)
- 491 *English Drama II.* (3)
- 501 *Workshop in Imaginative Writing.* (3)
- 509 *Composition for Teachers.* (3)
- 510 *American English.* (3)
- 512 *Modern English Grammar.* (3)
- 514 *Descriptive Linguistics: Phonetics.* (3)
- 515 *Descriptive Linguistics: Phonemics.* (3)
- 516 *Descriptive Linguistics: Morphemics.* (3)
- 518 *History of the English Language.* (3)
- 519 *Introduction to Old English.* (3)
- 520 *Middle English Literature.* (3)
- 522 *English Renaissance: 1500-1600.* (3)
- 523 *English Renaissance: 1600-1660.* (3)
- 526 *Shakespeare: Studies I.* (3)
- 527 *Shakespeare: Studies II.* (3)
- 530 *The Restoration and Early 18th Century: 1660-1730.* (3)
- 531 *The Later 18th Century: 1730-1780.* (3)
- 535 *The Romantic Movement: 1780-1815.* (3)
- 536 *The Romantic Movement: 1815-1830.* (3)
- 538 *Victorian Period: 1830-1860.* (3)
- 539 *Victorian Period: 1860-1900.* (3)
- 541 *Contemporary British Literature.* (3)
- 542 *Twentieth Century British Literature.* (3)
- 550 *American Literature before 1800.* (3)
- 551 *American Literature: 1800-1860.* (3)
- 552 *American Literature: 1860-1900.* (3)
- 553 *American Literature since 1900.* (3)

- 560 *Comparative Literature I.* (3)
- 561 *Comparative Literature II.* (3)
- 562 *Comparative Literature III.* (3)
- 563 *Comparative Literature IV.* (3)
- 566 *Modern Drama.* (3)
- 568 *History of Literary Criticism I.* (3)
- 569 *History of Literary Criticism II.* (3)
- 570 *Selected Topics for Advanced Studies in Literature.* (3)
- 572 *Studies in English for High School Teachers.* (1-3)

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.

- 600 *Bibliography and Methods of Research.* (3)
- 620 *Studies in Middle English Literature.* (3)
- 621 *Studies in Chaucer.* (3)
- 622 *Studies in English Literature: 1500-1600.* (3)
- 623 *Studies in English Literature: 1600-1660.* (3)
- 625 *Studies in Renaissance Drama Exclusive of Shakespeare.* (3)
- 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)
- 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)
- 660 *Modern Critical Theory.* (3)
- 673 *Studies in Folklore.* (3)
- 682 *Studies in Fiction.* (3)
- 683 *Studies in Drama.* (3)
- 684 *Studies in Poetry.* (3)
- 720 *Seminar in Medieval Literature.* (3)
- 722 *Seminar in 16th Century Literature.* (3)
- 723 *Seminar in 17th Century Literature.* (3)
- 726 *Seminar in Shakespeare.* (3)
- 730 *Seminar in 18th Century Literature.* (3)
- 735 *Seminar in Romantic Literature.* (3)
- 738 *Seminar in Victorian Literature.* (3)
- 740 *Seminar in 20th Century British Literature.* (3)
- 750 *Seminar in Colonial Literature.* (3)
- 751 *Seminar in American Literature: 1800-1860.* (3)
- 752 *Seminar in American Literature: 1860-1900.* (3)

- 753 *Seminar in American Literature since 1900.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree* (1-12)
 771 *Seminar in Special Topics.* (3)
 774 *Seminar in Comparative Literature.* (3)
 780 *Directed Studies.* (1-3)

FRENCH LANGUAGE AND LITERATURE

Graduate Faculty: Professors Jean Charron, Philip Duncan, Clark Keating, Walter Langlois, Theodore Mueller. Associate Professors Raymond La Charite (Chairman and Director of Graduate Studies), Rupert Pickens.

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. Candidates must demonstrate a reading knowledge of another foreign language and pass a written, comprehensive examination in six of the following areas: medieval, 16th, 17th, 18th, 19th, 20th-Century French literature, and linguistics. The M.A. examination will be given every November, January, April, and July. Application for the examination should be made to the Director of Graduate Studies no later than 10 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 two years of residence work beyond the M.A. In addition to their program of study in the department, candidates must demonstrate a reading knowledge of two other Romance languages (Latin included) or of one other Romance language and German or Russian.

Candidates for the Ph.D. degree are required to pass written examinations, followed by an oral examination, to be held after the papers have been read and graded. Candidates will be examined on their choice of three of the four following areas:

1. medieval or 16th-Century French literature
2. the 17th Century or the 18th Century
3. the 19th Century or the 20th Century
4. linguistics.

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

The Ph.D. written examinations are given three times a year: 1) September 15-30, 2) Jan-

uary 15-31, and 3) March 20 to April 5. Application for the examination should be made to the Director of Graduate Studies no later than 10 days prior to the date of examination.

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

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

- 407 *French Phonetics.* (3)
 412 *Advanced French Conversation.* (2)
 417 *Linguistic Survey of French.* (3)
 422 *French Literature in Translation: 18th and 19th Centuries.* (3)
 423 *French Literature in Translation: Twentieth Century.* (3)
 435 *A Survey of French Literature of the Middle Ages.** (3)
 436 *A Survey of French Literature of the Renaissance.** (3)
 437 *A Survey in French Literature of the Seventeenth Century.** (3)
 438 *A Survey of French Literature of the Eighteenth Century.** (3)
 439 *A Survey of French Literature of the Nineteenth Century.** (3)
 440 *A Survey of French Literature of the Twentieth Century.** (3)
 450 *French Civilization in the Twentieth Century.* (3)
 460 *Masterpieces of the French Novel.*** (3)
 461 *Masterpieces of French Drama.*** (3)
 462 *Masterpieces of French Poetry.*** (3)
 506 *Advanced French Composition.* (3)
 507 *French Stylistics.* (3)
 516 *Introduction to Old French.* (3)
 517 *Introduction to the Phonological Structure of French.* (3)
 553 *The Teaching of Modern Foreign Languages.* (3)
 603 *The Development of the French Language.* (3)
 607 *Syntactic Structure of French.* (3)
 610 *Romance Philology.* (3)
 611 *Old Provençal.* (3)
 612 *The Old French Chanson de Geste.* (3)
 613 *Courtly Love and the Courtly Romance.* (3)
 614 *The Satirical Tradition.* (3)
 615 *The Medieval French Drama.* (3)
 616 *Didactic Literature of the Middle Ages.* (3)
 617 *Middle French Lyric.* (3)
 618 *Memorialists and Historians of the French Middle Ages.* (3)
 619 *The Early Lyric.* (3)
 621 *Rabelais.* (3)
 622 *Montaigne.* (3)
 623 *French Renaissance Poetry I.* (3)

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

** FR 460 (spring 1972, fall 1973), 461 (fall 1972, spring 1974), 462 (spring 1973, fall 1974).

- 624 *French Renaissance Poetry II.* (3)
 625 *The Conteurs of the French Renaissance.* (3)
 626 *Non-Fictional Prose Writers of the French Renaissance.* (3)
 630 *Corneille.* (3)
 631 *Racine.* (3)
 632 *Molière.* (3)
 633 *Seventeenth-Century French Prose.* (3)
 634 *Pre-Classical French Drama.* (3)
 635 *History of Ideas in Seventeenth-Century French Literature.* (3)
 636 *Seventeenth-Century Non-Dramatic Poetry.* (3)
 640 *Voltaire.* (3)
 641 *Diderot.* (3)
 642 *Rousseau.* (3)
 643 *The Eighteenth-Century French Novel.* (3)
 644 *Eighteenth-Century French Theater.* (3)
 645 *History of Ideas in the Eighteenth Century.* (3)
 651 *French Romanticism I: Prose.* (3)
 652 *French Romanticism II: Poetry and Theater.* (3)
 653 *Baudelaire, Rimbaud, Mallarmé.* (3)
 654 *The French Realist Novel.* (3)
 655 *Flaubert.* (3)
 656 *The French Naturalist Novel.* (3)
 661 *Twentieth-Century Prose I: The Early Decades.* (3)
 662 *Twentieth-Century Prose II: The Literature of Commitment.* (3)
 663 *Malraux.* (3)
 664 *French Existentialist Literature.* (3)
 665 *Major Intellectual Currents in Modern French Literature.* (3)
 666 *The French Theater Since World War I.* (3)
 667 *Contemporary Poetry.* (3)
 668 *Proust.* (3)
 669 *Surrealism.* (3)
 670 *Theater of the Absurd.* (3)
 671 *The New Novel.* (3)
 714 *Seminar in the History of the French Language.* (3)
 715 *Seminar in Medieval French Studies.* (3)
 716 *Seminar in French Literature of the Renaissance.* (3)
 717 *Seminar in 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 the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 780 *Special Studies in French.* (3)

GEOGRAPHY

Graduate Faculty: Professors Thomas Field, P. P. Karan (Chairman and Director of Graduate Studies), W. A. Withington.

Associate Member: Assistant Professor Karl Raitz.

The Department of Geography offers both M.A. and Ph.D. programs. The emphasis is on the doctoral program which provides a research-oriented professional training. The research training and skills of the individual graduate students are developed within the framework of research seminars and courses given by the faculty. This framework is based on the following specific research clusters of the discipline:

Theoretical Geography—The philosophy of social science; theory construction; study of contemporary geographic theory; regional theory.

Cultural Geography—Functional dynamics of urban systems; social and behavioral aspects of cities; urban and rural settlement patterns; migration and diffusion processes; population; ethnic geography; cultural resources; cultural regions.

Remote Sensing—Problems of acquiring and interpreting data from remote sensors, including air photo interpretation, in the analysis of the physical environment and patterns of human activity.

Transportation Geography—Spatial structure of transportation and circulation systems; commodity flow and linkage analysis; transportation and modernization processes.

Applied Cartography—Map transformation, mapping spatial perception and behavior.

Political Geography—Studies of regional and national power settings; boundary problems; territorial behavior and perception; quantitative methods for analysis of political processes and structures; spatial aspects of administrative systems and urban politics.

Applied Geography—The application of geographic theory to the location of public services; regional development problems in underdeveloped areas; regional problems in resource use and management; regional planning; spatial and ecological dimensions of development in regions undergoing "modernization."

The topical fields emphasizing dynamic spatial patterns, processes, behavior, and relationships receive particular attention in regional geographic specializations in North America, Appalachia, the Indian Subcontinent, Southeast Asia, Western Australia. A student may elect to specialize in the geography of a specific region only if faculty members have research experience in that region.

Applicants for the Ph.D. in geography must conform to the general requirements of the Grad-

uate School as set forth in the first part of this Bulletin. Although there is no specific course work required in the Ph.D., the program consists of (1) core courses (Geo 602, 700, 702, 707 and 710) in the theory and methodology of geography, (2) seminars, independent study and directed research in one of the specific research clusters noted above, (3) successful examination in one modern foreign language, and (4) a dissertation based on original research. Each doctoral candidate, in consultation with the Director of graduate program and the Special Committee, maps a program designed to meet the professional academic goals.

Graduate students are expected to share with the faculty an enthusiasm for geographic learning and inquiry. The program emphasizes informality in student-faculty relationships, flexibility in designing training programs for individual students, and the importance of competent empirical application of research skills.

Applicants for the M.A. degree in geography follow a broadly based program which consists of (1) recommended courses (GEO 601, 707, 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 discretion of the faculty a non-theis degree (Plan B requiring six additional credits) may be permitted. The M.A. student may not take more than six hours of course work below the 600 level. Except for methodological seminars, students are not required to take specific courses. Program is tailored to meet each student's particular needs and requirements, and many interdisciplinary topics may be chosen for study.

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

- 501 *Intermediate Field Studies.* (3)
- 505 *Cartography.* (3)
- 520 *Geography of the United States and Canada.* (3)
- 522 *Geography of Kentucky.* (3)
- 524 *Geography of Latin America.* (3)
- 526 *Geography of Europe.* (3)
- 528 *Geography of Asia.* (3)
- 530 *Geography of South Asia.* (3)
- 532 *Geography of Southeast Asia.* (3)

- 534 *Geography of Australia and the Pacific Islands.* (3)
- 536 *Geography of Africa.* (3)
- 540 *Urban Geography.* (3)
- 542 *Political Geography.* (3)
- 544 *Population Geography.* (3)
- 550 *Geography of Natural Resources.* (3)
- 551 *Climatology.* (3)
- 560 *Independent Work in Geography.* (3)
- 565 *Topics in Geography.* (3)
- 601 *Field Methods in Geography.* (3)
- 602 *Seminar in Theoretical Geography.* (3)
- 605 *Applied Cartography.* (3)
- 605 *Computer Cartography.* (3)
- 630 *Regional Study of Special Areas.* (3)
- 635 *Fundamentals of Remote Sensing of Environment.* (3)
- 640 *Transportation Geography.* (3)
- 643 *Urban Transportation Planning.* (3)
- 651 *Urban Climatology.* (3)
- 652 *Soil Classification and Geography.* (3)
- 655 *Special Study of Systematic Geography.* (3)
- 659 *Social Ecology.* (3)
- 700 *Quantitative Methods in Geography.* (3)
- 702 *Spatial Models in Geography.* (3)
- 707 *Seminar in Development of Geographic Thought.* (3)
- 710 *Research Methods and Methodology in Geography.* (3)
- 715 *Seminar in Systematic Geography.* (3)
- 720 *Seminar in the Geography of the United States and Canada.* (3)
- 725 *Applied Geography in Developmental Analysis.* (3)
- 730 *Seminar in Regional Geography.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 771 *Advanced Seminar in Geography.* (3)
- 772 *Special Research Problems in Geography.* (3)

GEOLOGY

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

Associate Member: Associate Professor Irving Fisher.

The Department of Geology offers graduate work leading to the M.S. degree under Plan A, and the Ph.D. The credentials of each applicant are considered individually and applicants from disciplines other than geology are encouraged to apply. Prospective students should have a good background in basic science and demonstrated competence at the undergraduate level. Deficiencies in geology and allied sciences must be removed by such course work as the department may specify. Each candidate is expected to have or obtain practice in geological field work and

teaching, must submit an acceptable thesis which demonstrates his ability to conduct sound research, and for the Ph.D. must demonstrate acceptable reading ability in one modern foreign language.

The principal fields of study offered are mineralogy-petrology, geochemistry, sedimentology-stratigraphy and paleontology, but other fields are available and interdisciplinary studies are encouraged.

Resources for the conduct of advanced studies in the way of reference collections, an outstanding library, well-equipped laboratories including the Cabot Spectrographic Laboratory facility, sample preparation and field equipment are available within the department. The laboratory apparatus includes X-ray fluorescence and diffraction, atomic absorption and spectrophotometry, dc arc and laser microprobe emission spectroscopy, petrographic microscopy, and special equipment for sedimentologic and paleontologic studies, clay mineralogy, and rock mechanics. Additionally, such extra-departmental facilities as computing, neutron activation, electron microscopy, and portable diamond drilling are readily available.

401 Paleontology.	(3)
420 Structural Geology.	(3)
424 Field Work in Regional Geology.	(7)
426 Field Work in Regional Geology—Report.	(1)
445 Advanced Principles of Geology I.	(4)
446 Advanced Principles of Geology II.	(4)
450 Stratigraphy and Sedimentation.	(3)
460 Elementary Mineralogy.	(4)
461 Elementary Petrology.	(3)
501 Stratigraphic Paleontology.	(3)
502 Paleocology.	(3)
510 Ore Deposits.	(3)
511 Petroleum Geology.	(2)
520 Advanced Field Geology.	(2)
530 Low Temperature Geochemistry.	(3)
531 Igneous and Metamorphic Geochemistry.	(3)
533 Rock Mechanics.	(3)
552 Sedimentary Petrology.	(3)
560 Optical Mineralogy.	(3)
562 X-Ray Mineralogy.	(3)
570 Geology Seminar.	(1)
612 Mineral Deposits.	(3)
620 Tectonics.	(3)
624 Mesoscopic Structures.	(3)
631 Advanced Prospecting.	(3)
633 Chemical Mineralogy.	(3)
650 Sedimentology.	(3)

652 Stratigraphy I.	(3)
653 Stratigraphy II.	(3)
654 Carbonate Petrology.	(3)
655 Hydrogeology.	(3)
660 Petrography.	(3)
665 Igneous and Metamorphic Petrology.	(3)
681 Mineralogical and Chemical Analysis of Soils.	(4)
710 Mineral Exploration.	(1)
711 Evaluation of Mineral Properties.	(1)
730 Graduate Geology Seminar.	(1)
732 Advanced Low-Temperature Geochemistry.	(3)
733 Petrologic Geochemistry.	(3)
741 Clay Mineralogy.	(3)
760 Petrology Seminar.	(2)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
782 Individual Work in Geology.	(1-3)

GERMANIC LANGUAGES AND LITERATURES

Graduate Faculty: Professors Paul Stapf, John Thomas, Paul Whitaker, Wayne Wonderley (Chairman and Director of Graduate Studies). Associate Professors Bernd Kratz, Virginia La Charite.

A fundamental goal of language study is to broaden and deepen acquaintance with the world by revealing aspects of its cultures, old and new. Following the idea that this goal is primarily accessible through study of the pertinent languages and literatures, the department emphasizes German in the graduate program. Supporting work in Scandinavian is offered. The faculty is concerned with the development and encouragement of an understanding of linguistic, human, and critical concepts.

Graduate programs leading to the M.A. (Plan A or Plan B) and Ph.D. in German are offered. Competence in German plus French or another foreign language are required for graduate degrees.

Admission requirements include an acceptable undergraduate major in German and a satisfactory score on the Graduate Record Examination.

Individual programs of study are planned with consideration of the student's competencies and interests. Thus, desiderata for teacher preparation are flexible and accommodate particular emphases appropriate for secondary schools or for two-year or four-year colleges. Likewise, suitable credit for studies successfully completed abroad is recommended.

Areas of specialization of the graduate faculty of the department afford flexible coverage in breadth and depth, with particular strength in

medieval linguistics and literature. The library has basic serial holdings in all areas of German language and literatures and supporting fields. Special collections include German drama on microcard and folklore on microfilm, a selection of Danish literature to 1900, and German books printed before 1600 on 35mm microfilm.

The department serves as a publishing center for Germanic studies. Under the aegis of the University Press of Kentucky it sponsors a monograph series in the Germanic languages and literatures. Other publications are *Colloquia Germanica*, *Germanic Notes*, and *Lyrice Germanica*. Lectures and extracurricular activities are provided, including the annual Kentucky Foreign Language Conference. Electronic facilities in support of the instructional program include a departmental tape library focusing on German cultural materials.

Students holding appointments as supervised teaching assistants take about four semesters to complete requirements for the M.A. degree and teach two basic or intermediate sections per semester. Those students devoting full time to graduate studies complete the M.A. degree in about three semesters. Appointments may be renewed. Summer offerings make it possible to obtain the M.A. degree through several semesters of summer study.

The Ph.D. degree in German normally requires a minimum of three years of graduate study (which may include work completed for the M.A. degree).

The department will be glad to answer questions or supply additional information. Address: Department of Germanic Languages and Literatures, Patterson Office Tower 1055, University of Kentucky, Lexington, Kentucky 40506; phone (606) 257-4641.

GERMAN

- 412 *Modern German Literature in Translation.* (3)
- 506 *Tutorial in Minor Germanic Language.* (3)
- 516 *History of German Literature.* (3)
- 520 *Germanic Proseminar.* (3)
- 522 *Germanic Impressionism.* (3)
- 532 *The German Lyric.* (3)
- 534, 535 *Life and Works of Goethe.* (3 ea.)
- 536 *Introduction to the History of the German Language.* (3)
- 537 *Introduction to Middle High German.* (3)
- 538 *Advanced German Conversation and Composition.* (3)
- 539 *Structure of the German Language.* (3)
- 553 *The Teaching of German.* (3)

- 621 *Introduction to German Bibliographical Studies.* (2)
- 622 *Theories of Literature in German.* (2)
- 624 *German Literature of the 16th and 17th Centuries.* (3)
- 625 *German Literature of the 18th Century.* (3)
- 626 *The Age of Goethe (1770-1830).* (3)
- 627 *German Drama of the 19th Century.* (3)
- 628 *The German Novelle.* (3)
- 630, 631 *20th Century German Literature.* (3 ea.)
- 635 *Gothic.* (3)
- 636 *Old High German.* (3)
- 640 *Studies in Germanic Language and Literature.* (3)
- 642 *Medieval German Literature.* (3)
- 643 *Longer Epic Verse of the German Medieval Period.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 778 *Seminar: Main Currents of Romance and German Literature.* (3)
- 781 *Special Studies in German.* (3)
- 790 *Germanic Seminar.* (4)

SCANDINAVIAN (Offered as required)

- 500 *Swedish.* (3)
- 501 *Swedish Literature from Bellman 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)

HISTORY

Graduate Faculty: Professors Raymond Betts, Carl Cone, Holman Hamilton, James Hopkins (Chairman), Richard Lowitt, Charles Roland, Gerald Silberstein, Robert Warth. Associate Professors William Chambliss, Randolph Daniel, Will Gilliam, Mary Wilma Hargreaves, George Herring (Director of Graduate Studies), Robert Ireland, Humbert Nelli, Donald Nugent, Robert Randall, John Scarborough, Joe Thompson.

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. Background

in at least one modern foreign language is required for admission. No person will receive the M.A. degree in history unless he demonstrates reading knowledge of a modern foreign language approved by the Department of History and by the Graduate School.

The M.A. degree in history may be obtained by Plan A or Plan B.

Under Plan B, the student must complete 36 credit hours. Of the minimum 15 hours in courses above the 500 level, at least six will be in courses of the 700 category. The decision whether a student will follow Plan A or Plan B normally is not made until he has completed the equivalent of at least one semester of full-time graduate study.

The Final Master's Examination under both plans is oral. The Master's Committee has the authority (1) to fail the student, (2) to pass the student and decide that the master's degree will be terminal, or (3) to pass the student and permit him to continue toward the doctoral degree at the University of Kentucky.

The Doctor of Philosophy 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 this Bulletin. The applicant does not become a candidate until he has demonstrated reading knowledge of two modern foreign languages approved by his Special Committee, and until he has passed the Qualifying Examinations and has been approved by the Graduate School for candidacy for the degree.

The student's work for the doctorate in history is directed by a Special Committee composed of representatives of his areas and fields under three preparation requirements. The committee's chairman directs the dissertation and the student should consult this person at his 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 his work in his fields, the student will pursue guided reading, research, and course work in one of the following areas:

- I. Ancient History (Greek and Roman)
- II. Early Middle Ages (c. 400-c. 1000)
- III. Late Middle Ages (c. 1000-c. 1500)
- IV. Early Modern Europe (1450-1770)
- V. Modern Europe (since 1770)

- VI. United States History
- VII. Britain and the Empire (1495 to present)
- VIII. Russia and East Europe
- IX. The Far East
- X. 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 fields.

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:

- I. Greece
- II. Rome
- III. Renaissance and Reformation (to 1648)
- IV. Modern Europe (1600-1770)
- V. Modern Europe (1770-1870)
- VI. Modern Europe (1870 to present)
- VII. United States to 1865
- VIII. United States since 1865
- IX. Britain and the Empire, 1485-1815
- X. Britain and the Empire, 1815 to present
- XI. Russia and East Europe, 1700-1890
- XII. Russia and East Europe, 1890 to present
- XIII. Hispanic America since 1810

Specialty Preparation: The student will prepare himself in a third field. Requirements for this field may be satisfied in one of the following ways:

- I. Achieving competence in some discipline other than history, but in one closely related to his major field of history.
- II. 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 his major professor. Final acceptance will rest with the student's Special Committee.

The student's success in his General Preparation will be evaluated by a written examination. His success in his Intensive and Specialty Preparations is evaluated by both written and oral examinations.

I. EUROPEAN HISTORY

- 490 *Modern Europe.* (3)
- 500 *Pre-Classical and Classical Greece.* (3)
- 501 *Fourth Century Greece and the Hellenistic World.* (3)
- 502 *A History of the Roman Republic.* (3)
- 503 *A History of the Roman Empire.* (3)
- 510 *Medieval Civilization to 1100.* (3)
- 511 *Medieval Civilization Since 1100.* (3)
- 512 *Medieval Institutions to 1049.* (3)
- 513 *Medieval Institutions Since 1049.* (3)
- 519 *The Era of the Renaissance.* (3)
- 520 *The Era of the Reformation.* (3)
- 521 *The Age of Absolutism.* (3)
- 523 *Europe, 1814-1870.* (3)
- 524 *Europe, 1870-1918.* (3)
- 525 *Europe since 1919.* (3)
- 528 *Cultural and Intellectual History of Europe from the Renaissance to the French Revolution.* (3)
- 530 *Social History of Europe in the Eighteenth Century.* (3)
- 531 *The French and European Revolutions, 1760-1795.* (3)
- 532 *Napoleonic Europe, 1796-1815.* (3)
- 534 *Russia in the Twentieth Century I.* (3)
- 535 *Russia in the Twentieth Century II.* (3)
- 536 *Intellectual and Cultural History of Russia and East Europe to 1890.* (3)
- 537 *Intellectual and Cultural History of Russia and East Europe from 1890 to the Present.* (3)
- 538 *The East European World from 1770-1920.* (3)
- 539 *The East European World from 1920 to the Present.* (3)
- 540 *History of Modern France to 1815.* (3)
- 541 *History of Modern France Since 1815.* (3)
- 542 *German History 1815-1914.* (3)
- 543 *German History Since 1914.* (3)
- 544 *A History of Italy 1789-1890.* (3)
- 545 *A History of Italy, 1890 to the Present.* (3)
- 547 *The Byzantine Empire.* (3)
- 548 *The Ottoman Empire.* (3)

II. ENGLAND AND THE BRITISH EMPIRE

- 550 *English Constitutional History to 1603.* (3)
- 551 *English Constitutional History Since 1603.* (3)
- 552 *British Social History During the Tudor-Stuart Period.* (3)

- 554 *British History 1815-1901.* (3)
- 555 *British History Since 1901.* (3)
- 556 *The British Empire to 1860.* (3)
- 557 *The British Empire and Commonwealth.* (3)
- 558 *History of Canada.* (3)

III. AMERICAN HISTORY

- 560 *Colonial America to 1748.* (3)
- 561 *Colonial America and Independence, 1748-1789.* (3)
- 562 *The New Nation, 1789-1828.* (3)
- 563 *Expansion and Conflict, 1828-1865.* (3)
- 564 *Emergence of Modern America, 1865 to 1912.* (3)
- 565 *Recent History of the United States, 1912 to 1939.* (3)
- 566 *Recent History of the United States Since 1939.* (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 and Social History of the United States to 1865.* (3)
- 571 *Economic and Social History of the United States Since 1865.* (3)
- 572 *American Constitutional History to 1865.* (3)
- 573 *American Constitutional History Since 1865.* (3)
- 574 *The Diplomacy and Foreign Policy of the United States to 1919.* (3)
- 575 *The Diplomacy and Foreign Policy of the United States Since 1919.* (3)
- 576 *The American Frontier.* (3)
- 577 *The American Frontier.* (3)
- 578 *History of the Old South.* (3)
- 579 *History of the New South.* (3)
- 580 *U.S. Urban History to 1865.* (3)
- 581 *U.S. Urban History Since 1865.* (3)
- 582 *Immigration and American History, 1815 to the Present.* (3)
- 584 *Economic History of Latin America Since Independence.* (3)
- 587 *Twentieth Century Latin American Revolutions.* (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)

THE GRADUATE GROUP

Seminars

These are content courses presented by the lecture and discussion method and as such are distinct from those numbered "700," which are

concerned with the problems and the practice of research.

- (3) 600 *European Historiography*. (3)
- (3) 603 *American Historiography*. (3)
- (3) 606 *Historical Criticism*. (3)
- (3) 611,612 *Readings in Ancient History*. (3 ea.)
- (3) 613,614 *Readings in Medieval History*. (3 ea.)
- (3) 621,622 *Readings in European History, 1500-1815*. (3 ea.)
- (3) 623,624 *Readings in European History Since 1815*. (3 ea.)
- (3) 625,626 *Readings in British and British Empire History*. (3 ea.)
- (3) 631,632 *Readings in United States History to 1865*. (3 ea.)
- (3) 633,634 *Readings in United States History Since 1865*. (3 ea.)
- (3) 635 *Readings in Modern Russian History I*. (3)
- (3) 636 *Readings in Modern Russian History II*. (3)
- (3) 637,638 *Readings in Latin American History*. (3 ea.)
- (3) 639 *Readings in East Asian History*. (3)
- (3) 640 *Readings in East Asian History*. (3)
- (3) 695 *Independent Work*. (1-3)

COURSES IN THE 700 GROUP

Seminars—basically research in character. These are not content courses. They provide special training in historical research (collection and critical analysis of bibliography, notetaking and organization of materials, and the presentation of a properly documented research paper). Topics will be chosen in keeping with the interests of the professors in charge. Two class hours and one conference hour.

- (3) 700 *Special Problems in History*. (3)
- (3) 705 *Seminar in Ancient History*. (3)
- (3) 706 *Seminar in Medieval History*. (3)
- (3) 710 *Seminar in American History, 1607-1783*. (3)
- (3) 711 *Seminar in American History, 1783-1865*. (3)
- (3) 712 *Seminar in American History, 1865 to the Present*. (3)
- (3) 715 *Seminar in Latin American History*. (3)
- (3) 720 *Seminar in Modern European History, 1500-1714*. (3)
- (3) 721 *Seminar in Modern European History, 1714-1870*. (3)
- (3) 722 *Seminar in Modern European History, 1870 to the Present*. (3)
- (3) 730 *Seminar in Modern British History*. (3)

Theses

- (3) 768 *Residence Credit for the Master's Degree*. (1-6)
- (3) 769 *Residence Credit for the Doctor's Degree*. (1-12)

MATHEMATICS

Graduate Faculty: Professors J. D. Buckholtz, Thomas Chapman, Edgar Enochs, Henry Howard, Frank Keogh, Donald Leigh, Wimberly Royster, S. M. Shaw, Clasine Van Winter, James Wells, Roger Wets. Associate Professors James Beidleman, Donald Coleman, Raymond Cox (Acting Chairman and Director of Graduate Studies), Paul Eakin, Carl Eberhart, Graeme Fairweather, Wayne Goodwyn, Thomas Hayden, John Mack, Michael McCord, Raymond Rishel, James Simpson, Ted Suffridge, Michael Freeman, Brauch Fugate.

Associate Members: Assistant Professors Richard Aron, James Brennan, Joel Cunningham, Roland Gariepy, Daniel Henry, Edward Kerlin, Kenneth Kubota, Alan Lambert, Frank Massey.

The Department of Mathematics grants the M.A., M.S. and Ph.D. degrees. There are no specific course prerequisites for admission; however, two semesters of advanced calculus, and at least one semester each of algebra and topology are suggested.

The master's degree is offered under both Plans A and B. A graduate student who holds a teaching assistantship is expected to complete the M.A. or M.S. program within two years.

A reading knowledge of one foreign language is required for the master's degree.

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, differential equations and topology. A comprehensive examination is required of each student. This examination normally is given after two years of graduate study.

In order to be admitted to candidacy for the degree, a student must pass proficiency examinations in two foreign languages chosen from French, German or Russian, complete studies in a minor field (either inside or outside the department) and successfully complete the comprehensive examinations. Subsequent work becomes highly specialized through seminars, independent study, and finally, work on a dissertation which penetrates in depth some field of particular interest. Areas in which members of the faculty have active research projects include functional analysis, algebraic and point-set topology, group theory, ring theory, complex analysis, Fourier analysis, rational approximation, function algebras, differential equations, topological algebra

and differential geometry, optimization theory,
and numerical analysis.

421 Elementary Numerical Analysis.	(3)
423 Introductory Probability.	(3)
432 Methods of Applied Mathematics I.	(3)
433 Methods of Applied Mathematics II.	(3)
441 Geometry I.	(3)
442 Geometry II.	(3)
462 Matrix Analysis.	(3)
471 Advanced Calculus I.	(3)
472 Advanced Calculus II.	(3)
481 Differential Equations I.	(3)
482 Discrete Methods and Models in Applied Mathematics.	(3)
483 Differential Equations.	(3)
485 Fourier Series and Boundary Value Problems.	(3)
501-502 Seminar in Selected Topics.	(3 ea.)
515 Mathematical Programming and Extensions.	(3)
524 Discrete Probability.	(3)
525 Numerical Solution of Ordinary and Partial Differential Equations.	(3)
531 Theory of Statistical Inference I.	(4)
532 Ordinary Differential Equations.	(3)
533 Partial Differential Equations.	(3)
535 Vector and Tensor Analysis.	(3)
536 Operational Calculus and Generalized Functions.	(3)
538 Elementary Numerical Analysis.	(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)
572 Analysis II.	(3)
573 Applied Complex Analysis.	(3)
585 Boundary Value Problems of Mathematical Physics.	(3)
611 Independent Work in Mathematics.	(3-9)
615 Context Analysis and Optimization.	(3)
624 Advanced Probability I.	(3)
632 Advanced Differential Equations.	(3)
633 Theory of Partial Differential Equations.	(3)
635 Theory of Tensors.	(3)
637 Approximation Theory.	(3)
638 Advanced Numerical Analysis.	(3)
641, 642 Differential Geometry.	(3 ea.)
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)
671,672 Functions of a Complex Variable.	(3 ea.)
673 Several Complex Variables.	(3)
678 Calculus of Variations.	(3)
681 Functional Analysis I.	(3)
682 Functional Analysis II.	(3)
683 Convergence and Summability.	(3)
685 Fourier Analysis.	(3)
687 Integral Equations.	(3)
703 Advanced Probability II.	(3)
732 Selected Topics in Differential and Integral Equations.	(3)
751,752 Selected Topics in Topology.	(3 ea.)
753,754 Selected Topics in Functional Analysis.	(3 ea.)
755,756 Selected Topics in Topological Algebra.	(3 ea.)
757 Seminar in Topology.	(3)
761 Homological Algebra.	(3)
762 Theory of Rings.	(3)
763 The Theory of Fields.	(3)
764,765 Selected Topics in Algebra.	(3 ea.)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
771,772 Selected Topics in the Theory of Complex Variables.	(3 ea.)
773,774 Selected Topics in Analysis.	(3 ea.)
777,778 Mathematical Seminar.	(3 ea.)

SCHOOL OF MUSIC

Graduate Faculty: Carl-Werner Guempel (UL) adjunct series, Gerhard Herz (UL) adjunct series, Robert McMahan (UL) adjunct series. Professors Bernard Fitzgerald, Hubert Henderson, Gordon Kinney, Rey Longyear, Wesley Morgan (Director of School), Nathaniel Patch, Kenneth Wright. Associate Professor Frank Traficante (Director of Graduate Studies).

The School of Music offers the Master of Arts (M.A.) in music, Master of Music (M.M.) in performance, music theory, composition, and music education, Doctor of Musical Arts (D.M.A.), 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 EXAMINATIONS

Entrance examinations in the areas of theory, music history, and literature, and the proposed field of specialization must be taken by all appli-

cants for admission to graduate programs in music. Graduates of or students currently enrolled at the University of Kentucky are not exempt from this requirement. Students seeking a degree in performance must audition. Entrance examinations will be given and auditions held at three times during the spring semester for students planning to enroll the following fall. These are the last Saturday in January, and the second Saturdays in March and July. Persons not applying for financial assistance may choose any one of these dates.

Persons applying for Non-Service Fellowships must choose the January date, while those applying for assistantships may choose either of the January or March dates. Those persons wishing to begin their studies during the summer session must also take the examination no later than the March date. Applicants must notify the Director of Graduate Studies of their choice at least two weeks in advance for the January and March dates and by April 15 for the July date.

Entrance examinations will be given and auditions held on the second Saturday in November for students wishing to enroll in the spring semester. Notice must be sent to the Director of Graduate Studies two weeks in advance by students planning to be present on this date.

In cases of extreme hardship arrangements may be made with the Director of Graduate Studies to enable students to take the entrance examinations **in absentia** and to send audition tapes.

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. A foreign language is optional for the Master of Music degrees except for candidates majoring in Vocal performance. The Voice major must have completed one year of study in each of two modern foreign languages.

Thesis Requirements: The Master of Arts degree requires a thesis. 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 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 in the Master of Music in Music Education or Theory and Master of Arts in Education curricula. Twenty-four hours

of work are required with a thesis or 30 hours without.

A final comprehensive examination is required for each program.

MASTER OF ARTS (MUSIC)

Prerequisites: A suitable background in music theory or music literature and satisfaction of the Graduate School requirement for a reading knowledge of one foreign language, normally French or German.

	Crs.
Music History and Literature	9-12
Theory (Music 578 and/or 671; 672 recommended)	5-8
Research Methods (Music 618)	2
Directed electives	2-8
Thesis	0
	24

MASTER OF MUSIC (THEORY)

Prerequisite: 10 hours of upper division theory, including form and analysis and counterpoint, or the equivalent.

Theory (including Music 578 or 671 and 672)	10
Research Methods (Music 618)	2
Music History and Literature	6
Research Methods	4
Directed electives	6-12
Thesis (if desired)	0
	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)

Prerequisite: Submission of three original compositions.

Advanced Composition (Music 673)	4
Music History and Literature	6
Theory (including Music 578 and/or 671)	8
Directed electives	6
Thesis composition	0
	24

The thesis composition must be publicly performed and the student is responsible for the preparation of legible score and parts.

MASTER OF MUSIC (PERFORMANCE)

Prerequisite: Acceptance by the appropriate faculty of applied music.

Applied Music (including recital)	9
Music History and Literature	6
Theory (including Music 578 or 671)	4
Directed electives	11
Recital	0
	30

Wind, string and percussion majors must participate in at least one University-sponsored performing organization for two semesters unless excused by a vote of the faculty. The student must expect to spend a minimum of three full semesters, excluding summer sessions, in applied music study.

MASTER OF MUSIC (MUSIC EDUCATION)

Plan I*

History and Philosophy of Music Education (Music 751)	3
Supervision and Administration of School Music (Music 750)	3
Music Education Electives	6
Applied Music (500 level)	6
Major	(3)
Performance electives	(3)
Research Methods (Music 617)	2
Music History and Theory (including Music 578 or 671)	6
Electives in Music or Education	4
	30

Plan II*

History and Philosophy of Music Education (Music 751)	3
Supervision and Administration of School Music (Music 750)	3
Music Education Electives	6
Applied Music (500 level)	3
Research Methods (Music 617)	2
Theory (including Music 578 or 671)	4
Music History and Literature	6
Electives	3
	30

Plan III*

History and Philosophy of Music Education (Music 751)	3
Supervision and Administration of School Music (Music 750)	3
Music Education Electives	3

Applied Music (500 Level)	3
Research Methods (Music 617)	2
Music History and Theory (including Music 578 or 671)	6
Electives	4
Thesis	0
	24

Each full-time resident graduate student in music education must participate in a University-sponsored performing organization for two semesters unless excused by a vote of the faculty.

The Degree of Doctor of Musical Arts

The D.M.A. program offers each candidate opportunities for his fullest development as a specialist in his field of interest. Fields of specialization offered in the D.M.A. program are Music Education, Theory, and Performance Pedagogy. Work in Performance Pedagogy may be done in one of several applied areas such as piano, voice, conducting, etc. In each case, every effort is made to allow for the candidate's growth in terms of his own unique insight and potential.

The requirements for this degree are the same as for the degree of Doctor of Philosophy except that only one foreign language, normally French or German, is required for the D.M.A. degree. The candidate must also demonstrate a working knowledge of music terms in French, German, and Italian prior to the qualifying examination.

The applicant for this degree must have at least two years of successful teaching experience.

He must submit, prior to admission to candidacy, his master's thesis or two papers of approximately 1,000 words each, one of the papers dealing with the teaching of music.

The following minimum core requirements for the D.M.A. beyond the bachelor's degree are as follows:

	Crs.
Music History and Literature	12
Music Theory	8
Research Methods	4
Minor outside department	9
Courses in area of specialization	at least 15

The candidate will minor in either musicology or music theory, with a second minor to be taken outside the School of Music, subject to the approval of his committee and the chairman of the department concerned.

* Students planning to earn the doctorate in Music Education should elect Plan II or III.

The Degree of Doctor of Philosophy in Musicology

Historical musicology is a humanistic discipline drawing upon various research methods necessary to the discovery, correlation, appraisal, and exposition of musical criteria in any given stylistic era or eras. As a humanist, the musicologist 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.

All applicants must provide evidence of competence in research and writing. Those applicants holding or earning a baccalaureate degree should present at least one term paper or the equivalent, such as the senior honors thesis. Applicants with a Master's degree must submit the M.A. thesis. If the applicant has not completed a Master's degree including a thesis, he or she must submit research papers of acceptable scope and quality plus a major research project undertaken as part of work done at the University of Kentucky or the University of Louisville.

Admission to full graduate standing: An applicant may be admitted to full graduate standing in the Ph.D. program after (1) demonstrating a satisfactory reading knowledge of German; (2) completion and acceptance of the major research project in lieu of the M.A. thesis, if this requirement is applicable to the applicant; (3) satisfactory completion of at least nine hours of course work at or above the 600 level, including at least one seminar or special course; (4) having taken or being enrolled in the proseminar in musicology (MUS 619); (5) formation of the special committee; and (6) meeting the requirements of the Graduate School for admission to full graduate standing. An applicant has not been officially admitted to the Ph.D. program until he or she has been admitted to full graduate standing.

Language requirements: The foreign languages required for the Ph.D. in musicology are German and either French or Italian, plus any other languages (e.g., Latin, Spanish, Russian) required for preparing the dissertation.

Course requirements: The following courses are required for the Ph.D.

Research Methods (MUS 618 at UK; MusH at UL);

Proseminar in Musicology (MUS 619 at UK); Six hours of graduate level advanced analysis (MUS 671-72 at UK; Mus 647-648 and MusH 583 A, B, C, or D at UL);

A minimum of four seminars or special courses (MUS 702 or 718 at UK; MusH 670, 680, or 682 at UL);

An outside minor of at least three courses in a subject field related to musicology, to be taken outside the School of Music. (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.

Renaissance Notation (MUS 701 at UK; MusH 583 C and D at UL).

Courses taken in musicology should include a representative distribution of both period and literature courses, courses in music written before and after 1600, and courses offered at the Universities of Kentucky and Louisville.

Residence requirement: Together with other residence requirements of the University of Kentucky, a doctoral student in musicology 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.

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 he or she has demonstrated reading knowledge of two modern foreign languages as previously stipulated, has passed the qualifying examination, and has been approved by the Graduate School as a candidate for the Ph.D. in musicology.

MUSIC PERFORMANCE COURSES

All music performance courses may be repeated three times for credit.

All music performance courses carry one credit hour if offered in the Summer Session. During the fall and spring semesters they carry from one to four credits.

Piano	501,601
Voice	502,602
Organ	503,603

Violin	504,604
Viola	505,605
Cello	506,606
String Bass	507,607
Flute	508,608
Oboe	509,609
Clarinet	510,610
Bassoon	511,611
Trumpet	512,612
French Horn	513,613
Trombone	514,614
Baritone	515,615
Tuba	516,616
Saxophone	517,617
Percussion	518,618
Harp	519,619
Harpsichord	520,620
Viol	521,621
Historical Instruments	522,622

500 <i>Music of the Middle Ages.</i>	(3)
501 <i>Music of the Renaissance.</i>	(3)
502 <i>Music of the Baroque Era.</i>	(3)
503 <i>Music of the Classic Period.</i>	(3)
504 <i>Music of the Nineteenth Century.</i>	(3)
505 <i>Music of the Twentieth Century.</i>	(3)
506 <i>History of American Music.</i>	(3)
520 <i>Vocal Solo Literature.</i>	(3)
521 <i>Organ Literature.</i>	(3)
522 <i>Piano Literature.</i>	(3)
524 <i>String Literature.</i>	(3)
530 <i>Collegium Musicum.</i>	(3)
561 <i>Current Practices in Elementary and Secondary School Music.</i>	(2)
565 <i>Vocal Pedagogy.</i>	(2)
568 <i>General Music in the Secondary School.</i>	(2)
570 <i>Orchestration.</i>	(2)
571 <i>Orchestration.</i>	(2)
572 <i>Counterpoint.</i>	(2)
573 <i>Counterpoint.</i>	(2)
574 <i>Composition.</i>	(2)
575 <i>Composition.</i>	(2)
578 <i>Analytical Techniques.</i>	(2)
601 <i>History of Performance Practices.</i>	(3)
617 <i>Research Methods.</i>	(2)
618 <i>Research Methods.</i>	(2)
619 <i>Proseminar in Musicology.</i>	(2)
620 <i>Advanced German Vocal Literature.</i>	(3)
621 <i>Advanced Vocal Literature.</i>	(3)
622 <i>Symphonic Literature.</i>	(3)
623 <i>Opera Literature.</i>	(3)
624 <i>Chamber Music Literature.</i>	(3)
625 <i>Choral Literature.</i>	(3)

650 <i>Music Education Workshop.</i>	(1-4)
671 <i>Advanced Musical Analysis.</i>	(3)
672 <i>Advanced Musical Analysis.</i>	(3)
673 <i>Advanced Composition.</i>	(2)
674 <i>Pedagogy of Theory.</i>	(2)
675 <i>Pedagogy of Theory.</i>	(2)
677 <i>Contemporary Music Idioms.</i>	(3)
700 <i>Medieval Notation.</i>	(3)
701 <i>Renaissance Notation.</i>	(3)
702 <i>Seminar in Musicology.</i>	(3)
703 <i>Studies in Music History.</i>	(2)
718 <i>Doctoral Seminar.</i>	(3)
719 <i>Independent Work in Musicology.</i>	(1-3)
750 <i>Administration and Supervision of Public School Music.</i>	(3)
751 <i>History and Philosophy of Music Education.</i>	(3)
762 <i>Music in Higher Education.</i>	(3)
766 <i>Seminar in Music Education.</i>	(3)
767 <i>Independent Work in Music Education.</i>	(1-3)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
769 <i>Residence Credit for the Doctor's Degree.</i>	(1-12)
770 <i>Psychology of Music.</i>	(3)
799 <i>Independent Work in Music Theory.</i>	(1-3)

PHILOSOPHY

Graduate Faculty: Professors Jesse DeBoer, Dallas High (Chairman). Associate Professors Michael Bayles (Director of Graduate Studies), Thomas Olschewsky, Alan Perreiah.

Associate Members: Assistant Professors Daniel Breazeale, Ronald Bruzina, James Fetzer, James Manns.

The Department of Philosophy offers courses of study leading to a Master of Arts degree under both Plan A and Plan B. The department admits students who wish to terminate their philosophical study at the M.A. level as well as those who view it as preparatory to pursuit of the Ph.D. (At present the department does not offer this degree.) The department does not require an undergraduate major in philosophy as a prerequisite to the graduate program, indeed, it is interested in students with a broad background in other disciplines. However, remedy for deficient background in history of philosophy and logic must be undertaken upon entrance to the program.

A reading knowledge of one foreign language is required for the master's degree.

418 <i>Existentialism.</i>	(3)
440 <i>Great Religions.</i>	(3)
520 <i>Intermediate Logic.</i>	(3)

GROUP A

- 502 *Plato and Aristotle.* (3)
 505 *History of Medieval and Renaissance Philosophy.* (3)
 508 *Kant.* (3)
 511 *Continental Rationalism.* (3)
 512 *British Empiricism.* (3)
 513 *19th Century Philosophy.* (3)
 514 *American Philosophy.* (3)
 515 *Contemporary Philosophy.* (3)
 516 *Phenomenology.* (3)

GROUP B

- 530 *Ethical Theory.* (3)
 535 *Social and Political Philosophy.* (3)
 537 *Philosophy of Law.* (3)
 545 *Philosophy of Religion.* (3)
 592 *Aesthetics.* (3)

GROUP C

- 550 *Metaphysics.* (3)
 555 *Epistemology.* (3)
 560 *Philosophy of Science.* (3)
 562 *Philosophy of the Social Sciences.* (3)
 565 *Philosophy of Language.* (3)
 570 *Philosophy of History.* (3)
 575 *Philosophy of Mind.* (3)

GRADUATE STUDIES

- 625 *Advanced Logic.* (3)
 680 *Special Topics in Philosophy.* (3)
 700 *Seminar in Ancient Philosophy.* (3)
 705 *Seminar in Medieval Philosophy.* (3)
 710 *Seminar in Modern Philosophy.* (3)
 715 *Seminar in Recent Philosophy.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 790 *Research in Philosophy.* (3)

PHYSICS AND ASTRONOMY

Graduate Faculty: Professors Lewis Cochran, Wendell DeMarcus, Fletcher Gabbard (Chairman and Director of Graduate Studies), Ben Gossick, Richard Hanau, Bernard Kern, Robert Knight, Wasley Krogdahl, Guy Lehman, Marcus McEllistrem, Clasine Van Winter, Francis Yost. Associate Professors Jerry Brandenberger, Marcel Coz, Alan MacKeller, Rudolph Schrills, Jesse Weil.

The Department of Physics and Astronomy offers courses and research options leading to the Ph.D. degree in the special areas of theoretic

astro-physics, experimental and theoretical atomic and molecular physics, experimental and theoretical nuclear physics, experimental and theoretical solid-state physics, and many body theory, 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.

A reading knowledge of one foreign language is required for the master's degree.

Physics

- 401 *Special Topics in Physics and Astronomy for Elementary and High School Teachers.* (2-4)
 404 *Mechanics.* (3)
 416 *Electricity and Magnetism.* (3)
 417 *Electricity and Magnetism.* (3)
 472 *Interaction of Radiation with Matter.* (3)
 504 *Advanced Mechanics.* (3)
 508 *Optics.* (3)
 510 *Spectroscopy.* (3)
 512 *Experimental Physics: Electricity and Magnetism.* (2)
 514 *Electronics.* (3)
 522 *Heat and Thermodynamics.* (3)
 524,525 *Solid State Physics.* (3 ea.)
 530 *Experimental Physics: Spectroscopy.* (2)
 535 *Experimental Physics: Atomic and Nuclear.* (2)
 538 *Experimental Physics: Light.* (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)
 554 *Fundamental Atomic and Nuclear Physics.* (3)
 555 *Fundamental Atomic and Nuclear Physics.* (3)
 598 *Introduction to Quantum Mechanics.* (3)
 600 *Selected Topics in Advanced Physics.* (2-3)
 604 *Classical Mechanics.* (3)
 611 *Electromagnetic Theory I.* (3)
 613 *Electromagnetic Theory II.* (3)
 624,625 *Theory of the Solid State.* (3 ea.)
 629 *Nuclear Physics I.* (3)
 630 *Nuclear Physics II.* (3)
 631 *Atomic Structure.* (3)
 632 *Statistical Mechanics.* (3)
 639,640 *Theoretical Astrophysics.* (3 ea.)
 650 *Theory of Relativity.* (3)

- 652 *Theory of Elementary Particles.* (3)
 682 *Electric Phenomena in Gases.* (3)
 706 *Methods of Mathematical Physics.* (3)
 714 *Quantum Mechanics I.* (3)
 715 *Quantum Mechanics II.* (3)
 716 *Advanced Quantum Mechanics.* (3)
 755 *Topics in Chemical Physics*
 (subtitle required). (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 770 *Colloquium.* (1)
 781 *Independent Work in Physics.* (3)
 790 *Research in Physics.* (3)
 791 *Research in Physics.* (5)

Astronomy

- 492 *Galactic Astronomy II.* (3)
 495 *Elementary Astrophysics I.* (3)
 496 *Elementary Astrophysics II.* (3)
 591 *Cosmology I.* (3)
 592 *Cosmology II.* (3)

POLITICAL SCIENCE

Graduate Faculty: Professors Vincent Davis, Malcolm Jewell, Sidney Ulmer. Associate Professors Bradley Canon (Chairman), Maurice East, George Gadbois, Dean Jaros (Director of Graduate Studies), William Lyons, Andrew Milnor, Herbert Reid, Sheldon Simon, Kenneth Vanlandingham. **Associate Members:** Assistant Professors Michael Baer, Kenneth Coleman, Lawrence Grant.

Candidates for admission to the graduate program in political science must provide the information required by the Graduate School and must also submit their scores on the Graduate Record Examination Aptitude Test and at least two letters of recommendation from members of the political science faculty of the applicant's undergraduate college. Students who are deficient in political science background must take such additional courses as are required by the department.

The Political Science Department offers both the M.A. and Ph.D. degrees. The M.A. degree may be earned under either of two plans: Plan A requires at least 24 hours of course work and a thesis; Plan B requires at least 30 semester hours of course work and an 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 a master's degree has the option of passing a foreign language requirement or demonstrating his analytical skills in a formal paper.

The Ph.D. program is divided into a general phase and a specialized phase. Entering students spend their first year in the general phase, which includes proseminars in methodology and in at least four major fields of political science. (Students who have previously taken graduate work may be exempt from some of these proseminars.) At the end of his first year of graduate work, the student is evaluated by a departmental committee and may be required to do further work and take examinations in one or more of these fields.

During the specialized phase of his graduate program, the student's work is based on a program that he prepares for approval by his special committee. He takes more advanced work in political science. He may take a minor in another discipline; if he does not, he must still take at least nine semester hours of course work outside political science. The qualifying examination in political science consists of two parts: (1) the student must prepare a paper on his major field of specialization and be examined orally on this paper by his special committee, (2) the student must write a prospectus for his dissertation and be examined orally on this by his special committee. The student must 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 chairman of the department.

- 501 *Latin American Relations.* (3)
 505 *Micro-Theory in Political Science.* (3)
 520 *Governments and Politics of South Asia.* (3)
 521 *Government and Politics of Southeast Asia.* (3)
 530 *The Conduct of American Foreign Relations.* (3)

- 531 *National Security Policy.* (3)
 540 *Rural Local Government.* (3)
 541 *The Foreign Policy of the Soviet Union.* (3)
 550 *Comparative Political Parties.* (3)
 551 *Comparative Foreign Policies.* (3)
 552 *Municipal Government.* (3)
 553 *Urban Government and Politics.* (3)
 554 *Survey of Sub-Saharan Politics.* (3)
 555 *Comparative Government—Parliamentary Democracies I.* (3)
 556 *Government and Politics of the Soviet Union.* (3)
 557 *Government and Politics in Sub-Saharan Africa.* (3)
 559 *Constitutional Politics.* (3)
 561 *Civil Liberties.* (3)
 563 *The American Judicial Process.* (3)
 565 *Comparative Government—Parliamentary Democracies II.* (3)
 566 *The United Nations.* (3)
 568 *The Governments and Politics of Eastern Asia.* (3)
 569 *Latin American Government and Politics.* (3)
 570 *American Political Parties.* (3)
 571 *Early Political Theory.* (3)
 572 *Modern Political Theory.* (3)
 573 *Public Opinion.* (3)
 574 *Kentucky Government and Constitution.* (3)
 575 *American Political Thought.* (3)
 576 *Legislative Process.* (3)
 577 *Introduction to Public Administration.* (3)
 578 *Public Personnel Administration.* (3)
 579 *Administrative Agencies and Public Policy.* (3)
 580 *The Budgetary Process.* (3)
 610 *Comparative Politics: Theory and Method.* (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 Methods and Methodology in Political Science II.* (3)
 674 *Proseminar in Theories of International Politics.* (3)
 680 *Proseminar in Political Institutions and Process.* (3)
 690 *Contemporary Political Thought: Theoretical Foundations of Political Concepts and Issues in the Twentieth Century.* (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)
 759 *Seminar in African Political Systems.* (3)

- 761 *The Constitution and Civil Rights.* (3)
 762 *Seminar in Judicial Policy Making.* (3)
 763 *Seminar in Administrative Politics.* (3)
 764 *Research in Judicial Behavior.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 770 *Seminar in Contemporary Political Theory.* (3)
 772 *Advanced Problems in Research Methods.* (3)
 773 *Asian Political Theory.* (3)
 776 *Seminar in Political Development.* (3)
 777 *Research Problems in International Relations.* (3)
 778 *Seminar in Comparative Foreign Policies.* (3)
 779 *Voting Behavior.* (3)
 780 *Legislative Behavior.* (3)
 784 *Seminar in Political Socialization.* (3)
 785 *Psychological Bases of Political Behavior.* (3)
 790 *Special Problems in Public Administration.* (3)
 791 *The Organization as a Political System.* (3)
 795 *Special Problems in Political Science.* (3)

PSYCHOLOGY

Graduate Faculty: Professors Robert Baker, James Calvin, Ronald Dillehay (Chairman), Betsy Estes, Jesse Harris, M. M. White, Leonard Worrell. Associate Professors Richard Bednar, Juris Berzins (Director of Graduate Studies), Edward Engel, Edward Newbury, Harriet Rose, James Spivey.

Associate Members: Assistant Professors Kenneth Jacobus, Donald McCoy, John Sensenig, Paul Stratton.

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, experimental, or social psychology. A master's degree in general psychology is also available.

The program in clinical psychology provides academic courses, practica, and an internship which permit the student to combine his 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, the National Institute of Mental Health Clinical Research Center, and various nearby state institutions.

The program in experimental psychology provides academic courses and research experience in any of the following areas of concentration:

learning, motivation, perception, developmental psychology, and cognitive processes. Current areas of research interest include verbal learning, psycholinguistics, instrumental learning, classical conditioning, visual perception, discrimination learning in children, and mathematical psychology. Laboratories for the study of human and animal behavior with supporting shop and computer facilities are available.

The program in social psychology is designed to provide intensive experience in research with members of the social psychology faculty, with the aim of developing in the student a strong theoretical and research competence with complex social phenomena. Traditions of both experimental laboratory research and naturalistic study are utilized; emphases include theoretical and applied significance of research. Within broad limits set by the program, any given student's course of study is designed to fit his 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 his adviser construct a program of study consistent with the academic interests and professional goals of the student. This program of study includes a minor in some field outside the Department of Psychology. 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 tests of the Graduate Record Examination and three letters of recommendation. For additional information concerning the program in psychology and such matters as financial support, contact the Chairman, Department of Psychology.

- 501 *Personality.* (3)
- 505 *Human Senses and Perception.* (4)
- 507 *Psychology of Learning.* (4)
- 509 *Animal Behavior.* (4)
- 511 *Experimental Child Study.* (3)
- 512 *Physiological Psychology.* (3)
- 518 *Mental Hygiene.* (3)
- 521 *Abnormal Psychology.* (3)
- 522 *Counseling Psychology.* (3)

- 530 *Biology of Motivation.* (2)
- 531 *Genetic Psychology.* (3)
- 535 *Psychological Testing.* (3)
- 540 *Introduction to Industrial Psychology.* (3)
- 541 *Psychology of Industrial Personnel Procedure.* (3)
- 543 *Interpersonal Dynamics.* (3)
- 544 *Social Psychology.* (3)
- 545 *Small Group Behavior.* (3)
- 570 *Human Learning and Problem Solving.* (3)
- 579 *Stuttering.* (3)
- 601 *Theories of Learning.* (3)
- 602 *Theories of Personality.* (3)
- 603 *Psychopathology.* (3)
- 610 *Psychometrics.* (3)
- 611 *Psychological Research.* (3)
- 616 *Research Design in Clinical Psychology.* (3)
- 617 *Experimental Approaches to Personality.* (3)
- 618 *Experimental Approaches to Psychopathology.* (3)
- 620 *Proseminar in Systematic Psychology.* (2)
- 621 *Proseminar in Learning.* (2)
- 622 *Proseminar in Personality.* (2)
- 623 *Proseminar in Sensation and Perception.* (2)
- 624 *Proseminar in Social Psychology.* (2)
- 625 *Proseminar in Developmental Psychology.* (2)
- 627 *Proseminar in Physiological Psychology.* (2)
- 628 *Proseminar in Human Learning and Thinking.* (2)
- 629 *Introduction to Clinical Psychology.* (1)
- 630 *Clinical Methodology I.* (2)
- 631 *Practicum in Clinical Methodology I.* (2)
- 632 *Clinical Methodology II.* (2)
- 633 *Practicum in Clinical Methodology II.* (2)
- 634 *Practicum in Clinical Psychology III.* (3)
- 635 *Practicum in Clinical Psychology IV.* (3)
- 636 *Systems of Psychotherapy.* (3)
- 637 *Practicum in Psychotherapy and Behavior Change.* (1-3)
- 638 *Clinical Child Psychology.* (3)
- 640 *Practice in Testing: Intelligence Tests.* (4)
- 641 *Psychological Measuring Instruments.* (3)
- 647 *Disorders of Language.* (3)
- 650 *Diagnosis and Counseling in Counseling Psychology.* (3)
- 663 *Practicum in Industrial Psychology.* (3)
- 700 *Seminar in Behavior Modification.* (3)
- 701 *Seminar in Clinical Child Psychology.* (3)
- 702 *Seminar in Community Mental Health.* (3)
- 703 *Seminar in Group Therapy.* (3)
- 704 *Seminar in Hypnosis.* (3)
- 705 *Research in Psychotherapy and Behavior Change.* (3)
- 710 *Seminar in Clinical Psychology.* (3)

767	<i>Seminar in Physiological Psychology.</i>	(3)
768	<i>Residence Credit for the Master's Degree.</i>	(1-6)
769	<i>Residence Credit for the Doctor's Degree.</i>	(1-12)
770	<i>Seminar in Psychology I.</i>	(0)
771	<i>Seminar in Psychology II.</i>	(0)
772	<i>Seminar in Learning.</i>	(3)
774	<i>Seminar in Verbal Behavior.</i>	(3)
775	<i>Advanced Seminar in Perception.</i>	(3)
776	<i>Seminar in Animal Motivation.</i>	(3)
777	<i>Seminar in Mathematical Psychology.</i>	(3)
778	<i>Seminar in Child Psychology.</i>	(3)
779	<i>Seminar in Social Psychology.</i>	(3)
780	<i>Problems in Psychology.</i>	(2)
781	<i>Research Participation.</i>	(1)
790	<i>Research in Psychology.</i>	(3)

SLAVIC AND ORIENTAL LANGUAGES AND LITERATURES

Graduate Faculty: Professor Leon Zolondek. Associate Professor Paul Forand.

At present no graduate majors are offered in Slavic and Oriental Languages and Literatures.

RUSSIAN

461	<i>Advanced Readings in Russian Literature</i>	(3)
462	<i>Advanced Readings in Russian Literature.</i>	(3)
463	<i>Russian Drama (in Russian).</i>	(3)
464	<i>Survey of Russian Literature to 1800 (in Russian).</i>	(3)
563	<i>Tolstoy and Dostoevsky (in English).</i>	(3)

HEBREW

401	<i>Hebrew Grammar and Syntax I.</i>	(3)
402	<i>Hebrew Grammar and Syntax II.</i>	(3)
576-577	<i>Studies in Semetic Philosophy.</i>	(3 ea.)

ARABIC

440	<i>Arabic Grammar and Syntax I.</i>	(3)
441	<i>Arabic Grammar and Syntax II.</i>	(3)
442	<i>Arabic Reading I.</i>	(3)
443	<i>Arabic Reading II.</i>	(3)

OTHER DEPARTMENTAL OFFERINGS

444	<i>The Writings of the Muslim Mystics.</i>	(3)
455	<i>Arabic Literature of the Iberian Peninsula.</i>	(3)
456	<i>Arabic and Persian Masterpieces.</i>	(3)
457	<i>Modern Islamic Literature.</i>	(3)

SOCIOLOGY

Graduate Faculty: Professors Howard Beers, James Brown, Lee Coleman, C. M. Coughenour,

Thomas Ford (Director of Graduate Studies), Eugene Gallagher, James Gladden, William Kenkel (Chairman), John O'Donnell, Frank Santapolo, Jon Shepard, Gerald Slatin, Robert Straus, Willis Sutton, Harwin Voss, George Wilbur, Grant Youmans. Associate Professors Rabel Burge, Philip Moody, John Stephenson.

Associate Members: Assistant Professors Walter Abbott, Henry Barlow, Richard Clayton, Thomas Garrity, Jon Hendricks, Clyde McCoy.

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. 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 a specialty area within sociology and to select a minor area outside the department. Areas of specialization in sociology currently stressed are: community and social organization; deviant behavior; family; medical sociology; population; social change and development; and social institutions, which includes study of two or more sub-areas such as sociology of religion, political sociology, and economic and industrial sociology. While core seminars in these specialties are offered, individual program flexibility is maintained so that a student may develop his own interests.

To aid in financing graduate education, a considerable number of assistantships, fellowships and other stipends are available to qualified students.

Sociologists at the University of Kentucky carry on a substantial variety of research projects, consultative activities, extension education programs and community services. Through affiliations with nearby institutions, specialized experience and training is available to graduate students.

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 fields.

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. Three letters of recommendation, a statement of educational and career goals, and a special departmental application are required. For additional information on departmental requirements and opportunities for financial assistance, write to the Director of Graduate Study in Sociology.

- 409 *The Family*. (3)
- 413 *Community Analysis*. (3)
- 418 *Social Change*. (3)
- 436 *Sociology of Deviant Behavior*. (3)
- 437 *Criminology*. (3)
- 441 *Group Organization and Leadership*. (3)
- 493 *Social Determinants of Economic Behavior*. (3)
- 501 *Population Analysis*. (3)
- 502 *Methods of Demographic Analysis*. (3)
- 503 *Social Classes*. (3)
- 510 *Socialization in the Family*. (3)
- 515 *Diffusion of Technology in Modern Society*. (3)
- 517 *Rural Sociology*. (3)
- 519 *Sociology of Urban Life*. (3)
- 521 *Industrial Sociology*. (3)
- 522 *Sociology of Complex Organizations*. (3)
- 525 *Religion and Culture*. (3)
- 526 *Culture and Personality*. (3)
- 527 *Society and Health*. (3)
- 529 *Political Sociology*. (3)
- 531 *Sociological Analysis of American Society*. (3)
- 532 *Race and Ethnic Relations*. (3)
- 533 *Social Anthropology*. (3)
- 534 *The Southern Appalachians: A Sociological Interpretation*. (3)
- 538 *Juvenile Delinquency*. (3)
- 540 *Collective Behavior and Social Movements*. (3)
- 542 *Human Relations in Administration*. (3)
- 544 *Social Psychology*. (3)
- 546 *Social Factors in Mental Health*. (3)
- 547 *The Sociology of Aging*. (3)
- 549 *Sociological Aspects of Mass Communication*. (3)
- 551 *Principles of Sociology*. (3)
- 561 *Comparative Sociology*. (3)
- 565 *Special Problems in Sociology*. (3)
- 571 *Contemporary Sociology*. (3)

- 581 *Techniques of Social Investigation*. (3)
- 615 *Analysis of Community Research*. (3)
- 618 *Theories of Social Change*. (3)
- 625 *Sociology of Religion*. (3)
- 632 *Minority Groups*. (3)
- 636 *Theory and Research in Deviant Behavior*. (3)
- 651 *Systematic Sociology*. (3)
- 661 *Educational Sociology*. (3)
- 670 *Seminar on Role Theory*. (3)
- 671 *Seminar in Contemporary Sociology*. (0)
- 681 *Research Design and Analysis*. (3)
- 685 *Integration of Theory and Research*. (3)
- 690 *Community Action Analysis*. (3)
- 695 *Social Ecology*. (3)
- 702 *Seminar in Social Demography*. (3)
- 720 *Seminar in Community Theories*. (3)
- 727 *Seminar on Socio-Cultural Change*. (3)
- 731 *Seminar in Comparative Social Organization*. (2)
- 738 *Seminar: Drug Use as Deviant Behavior*. (3)
- 766 *Concepts in Medical Sociology*. (3)
- 768 *Residence Credit for the Master's Degree*. (1-6)
- 769 *Residence Credit for the Doctor's Degree*. (1-12)
- 770 *Seminar in Sociological Theory*. (3)
- 772 *Topical Seminar in Sociology*. (3)
- 773 *Topical Seminar*. (3)
- 775 *Seminar in the Family*. (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)

SPANISH AND ITALIAN LANGUAGES AND LITERATURES

Graduate Faculty: Professors Joseph Jones, John Keller (Chairman), John Lihani, William McCrary, Daniel Reedy (Director of Graduate Studies). Associate Professors Brian Dendle, Margaret Jones, Gerardo Saenz.

Associate Members: Assistant Professors Michael Impy, Edward Stanton.

The Department of Spanish and Italian offers the Master of Arts in Spanish, and the Doctor of Philosophy in Spanish degrees.

General Prerequisites: Graduate Record Examination scores are required for admission. All entering degree candidates must be able to read, write, speak and understand English with a level of fluency sufficient to take courses in other departments.

Master of Arts Degree, Prerequisites: Attainment in Spanish equivalent to that required for

the undergraduate major in Spanish at the University of Kentucky.

M.A. Requirements: Standard Graduate School requirements except course work must include SPI 501 or equivalent, and reading knowledge of another language.

Doctor of Philosophy Degree, Requirements: 1) SPI 601-602, 660, and a minimum of two seminars in the department; 2) a reading knowledge of two foreign languages other than Spanish and English; 3) a minimum of three courses cognate to the field of special emphasis outside the area of Spanish; 4) successful completion of a series of four written examinations (plus a two hour oral); and 5) presentation of an acceptable dissertation.

Remarks: All candidates for the Ph.D. degree are required to spend at least two consecutive semesters of full-time residence beyond the M.A. degree (excluding summer sessions) in the department. Full-time residence is defined as follows: 1) nine course hours (excluding SPI 782) for departmental assistants teaching six hours, and 2) 12 course hours for fellowship holders. Experience has shown that doctoral candidates should plan to complete two years of full-time course work (nine hours per semester) beyond the M.A. degree.

The department recognizes four areas of study: Spanish Medieval, Renaissance, Modern (18th, 19th, 20th Centuries), and Spanish American literature. All candidates for the doctorate are asked to declare one of the four as an area of special competence. The minimum three courses outside of Spanish should be cognate to this field of special emphasis; they need not be taken entirely in one department. The final written examinations are designed to test competence in four areas and are required of all candidates. The examination corresponding to the field of special emphasis is longer and more detailed than the other three.

SPANISH

- 400 Senior Seminar. (3)
- 405 The Works of Cervantes. (3)
- 406 Spanish Literature of the 20th Century. (3)
- 407 Literature of Social Protest in Spanish America. (3)
- 420 Twentieth Century Spanish American Literature in Translation. (3)
- 421 Masterpieces of the Spanish Baroque Theater in Translation. (3)
- 422 Cervantes in Translation. (3)
- 423 Literary Currents of 20th Century Spanish Literature in Translation. (3)

- 501 Survey of the Spanish Language. (3)
- 502 Spanish Phonetics, Pronunciation and Phonemics. (3)
- 503 Masterpieces of Medieval Spanish Literature. (3)
- 509 Spanish Literature of the 17th Century: Drama. (3)
- 510 Spanish Literature of the 17th Century: Non-Dramatic Literature. (3)
- 515 Masterpieces of Modern Spanish Poetry. (3)
- 516 Masterpieces of Modern Spanish Drama. (3)
- 517 Masterpieces of the Modern Novel. (3)
- 523 Spanish American Prose Fiction. (3)
- 524 Spanish American Essay. (3)
- 525 Spanish American Drama. (3)
- 526 Spanish American Poetry. (3)
- 527 Spanish American Short Story. (3)
- 534 Structure of the Spanish Language. (3)
- 535, 536 Advanced Spanish Grammar and Composition. (3 ea.)
- 551 Tutorial Seminar for Majors in Spanish. (1)
- 553 The Teaching of Modern Foreign Languages. (3)
- 601 Old Spanish: Phonology and Paleography. (3)
- 602 Old Spanish: Morphology and Syntax. (3)
- 603 Medieval Spanish Literature I. (3)
- 604 Medieval Spanish Literature II. (3)
- 605 The Spanish and Spanish American Ballad. (3)
- 606 Romance Philology. (3)
- 607 Early Brief Narrative—13th, 14th, 15th Centuries. (3)
- 608 Spanish Epic. (3)
- 609 Spanish Poetry of the 13th, 14th, and 15th Centuries. (3)
- 615 The Spanish Novel to Cervantes. (3)
- 616 Cervantes. (3)
- 617 The Spanish Novel from Cervantes to Romanticism. (3)
- 618 Mystic and Ascetic Writers of the 16th and 17th Centuries. (3)
- 619 Lope de Vega. (3)
- 620 The Theatre of Tirso de Molina. (3)
- 621 The Theatre of Calderon de la Barca. (3)
- 622 Minor Dramatists of the Golden Age. (3)
- 623 Spanish Poetry of the 16th and 17th Centuries. (3)
- 624 Spanish Medieval and Renaissance Drama. (3)
- 628 Spanish Drama from the Neoclassic Period to the Generation of 1898. (3)
- 629 Spanish Drama from the Generation of 1898 to the Present. (3)
- 630 Prose Fiction from the Romantic Period to the Generation of 1898. (3)
- 631 Prose Fiction from the Generation of 1898 to the Present. (3)

- 632 *The Spanish Essay from the 18th Century to the Present.* (3)
 633 *Spanish Poetry from the 18th Century to the Present.* (3)
 641 *Spanish American Novel: Mexico, Central America, the Caribbean.* (3)
 642 *Spanish American Novel: South America.* (3)
 643 *Spanish American Poetry: Colonial Period to 1888.* (3)
 644 *Spanish American Poetry: Modernism to the Present.* (3)
 645 *Literary Currents in Contemporary Spanish American Fiction.* (3)
 660 *Bibliography and Methods of Research.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 770 *Seminar in Spanish Literature.* (3)
 771 *Seminar in Historical Linguistics.* (3)
 772 *Seminar in Medieval Spanish Literature.* (3)
 773 *Seminar in Golden Age Non-Dramatic Literature.* (3)
 774 *Seminar in Golden Age Theatre.* (3)
 775 *Seminar in Modern Spanish Literature.* (3)
 776 *Seminar in Spanish American Literature.* (3)
 782 *Special Studies in Spanish.* (3)

ITALIAN

- 543 *Survey of Italian Literature I.* (3)
 544 *Survey of Italian Literature II.* (3)
 561 *Old Italian.* (3)
 563 *Dante I.* (3)
 564 *Dante II.* (3)
 565 *Petrarch and Boccaccio.* (3)
 566 *Literature of the Italian Renaissance.* (3)
 571 *Modern Italian Novel.* (3)
 572 *Modern Italian Drama.* (3)
 573 *Modern Italian Poetry.* (3)
 591 *Dante in Translation.* (3)
 592 *Italian Renaissance Masterpieces in Translation.* (3)
 593 *Modern Italian Literature in Translation.* (3)

RUMANIAN

- 461 *Rumanian I.* (3)
 462 *Rumanian II.* (3)

STATISTICS

Graduate Faculty: Professors Richard Anderson (Chairman and Director of Graduate Studies), Zakkula Govindarajulu, Harlley McKean. Associate Professors David Allen, Vasant Bhapkar. **Associate Members:** Assistant Professors David Culver, Dennis Haack, Lynn LaMotte, Peter Purdue, William Thompson.

The Department of Statistics offers programs of study leading to the degrees of Master of Science, with or without a thesis, and Doctor of Philosophy. Close cooperation with the Departments of Computer Science and Mathematics exists on matters related to courses, graduate programs and faculty. The University is expanding its research capability in areas associated with statistics, such as biological and engineering systems, econometrics, 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 mathematics, statistics or an applied field are urged to apply.

The University of Kentucky is represented on the Committee on Statistics of the Southern Regional Education Board, which sponsors annually a Regional Graduate Summer Session.

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 three areas:

1. Statistical Inference: STA 531 and 601
2. Linear Models and Design: STA 602 and 603
3. Probability and Stochastic Processes: STA 524 and 624

Programs of study for Plan B require a total of at least 30 semester hours, which should include the equivalent of the six courses in the core curriculum and at least three other courses at the 500 level or higher. Those for Plan A should include the core curriculum and at least one other course at the 500 level or higher. At least 50 percent of the course hours in any master's program must be at the 600 level or higher. The non-core courses can be selected from a variety of courses both within and outside the Statistics Department. There are no formal minor requirements.

All master's candidates are required to take a departmental written examination. These exams are normally administered in April and August.

Doctoral Program

The Department endeavors to provide a program with considerable breadth. Every student must take the equivalent of the six courses required for the Master's degree plus STA 701 and 702. In addition, he takes at least eight other University 600-700 level courses, of which at least four should be from List A and at least two more should be from either List A or List B (below):

List A	List B
STA 612	STA 616
STA 630	STA 641
STA 661	STA 642
STA 665	STA 643
STA 703	STA 644
STA 721	

The last requirement may be modified for a student desiring an inter-departmental program such as operations research or for a student desiring a specialized program in an area such as probability. A reading knowledge of one foreign language is required of all Ph.D. candidates.

A student must pass the Master's departmental written examination at a Ph.D. level of competence to be eligible for the doctoral qualifying examination. The qualifying examination consists of a written examination taken by all Ph.D. students and an oral examination administered by the student's special committee.

Areas of dissertation research include Bayesian inference; categorical data analysis; decision theory; design and analysis for linear and non-linear models with emphasis on response surfaces, selection of predictors and variance components; empirical Bayesian procedures; misclassification problems; multivariate analysis; non-parametric inference; probability and stochastic processes; reliability and life-testing.

421 Basic Statistical Theory I.	(3)
422 Basic Statistical Theory II.	(3)
423 Introductory Probability.	(3)
482 Discrete Methods and Models in Applied Mathematics.	(3)
511 Statistical Analysis.	(3)
515 Mathematical Programming and Extensions.	(3)
524 Discrete Probability.	(3)
531 Theory of Statistical Inference I.	(4)
601 Theory of Statistical Inference II.	(3)
602 Theory of the General Linear Model.	(3)
603 Design and Analysis of Experiments.	(3)
612 Selected Areas in Statistics.	(3)
616 Design and Analysis of Sample Surveys.	(3)

624 Advanced Probability I.	(3)
630 Bayesian Inference.	(3)
641 Design and Analysis for Variance Component Models.	(3)
642 Response Surface Techniques.	(3)
643 Advanced Experimental Design.	(3)
644 Advanced Topics in Data Analysis.	(3)
661 Multivariate Analysis I.	(3)
665 Analysis of Categorical Data.	(3)
670 Basic Statistical Analysis.	(4)
674 Statistical Analysis and Experimental Design.	(3)
676 Statistical Analysis and Survey Design.	(3)
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 Theory of Statistical Estimation.	(3)
702 Advanced Theory of Hypothesis Testing.	(3)
703 Advanced Probability II.	(3)
721 Nonparametric Inference.	(3)
722 Topics in Nonparametric Inference.	(3)
762 Multivariate Analysis II.	(3)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)

THEATRE ARTS

Graduate Faculty: Professor 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's degree must complete a minimum of 30 semester hours. A maximum of six of these may be taken in allied subjects. Graduate students are encouraged to concentrate in one of the following areas: acting, directing, design, production.

It is assumed that a student who seeks a Master's degree in the Department of Theatre Arts will have had courses approximating those required for an A.B. degree with a major in theatre arts. If not, he 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.

590 History of the Theatre I.	(3)
591 History of the Theatre II.	(3)
592 Scene Design I.	(3)
593 Scene Design II.	(3)
594 Acting I.	(3)
595 Acting II.	(3)
596 Playwriting.	(3)
597 Teaching of Theatre Arts.	(3)

598 Theatre Directing I.	(3)
599 Theatre Directing II.	(3)
690 Studies in Technical Theatre: Production.	(3)
691 Studies in Technical Theatre: Lighting.	(3)
694 Advanced Styles of Acting.	(3)
794 Special Topics in Theatre Arts.	(3)
798 Directing.	(3)

Business and Economics

ACCOUNTING

Graduate Faculty: Professors William Ecton (Chairman of the Department of Accounting), James Knoblett (Coordinator of Graduate Studies), Albert Patrick. Associate Professors Paul Davis, Donald Madden, Lewis McCullers.

The Degree of Master of Science in Accounting

Objectives:

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.

Requirements:

1. Admission to the advanced degree program is open to students who hold a bachelor's degree from any accredited college or university, an undergraduate grade-point average of 2.7 or above, and at least 450 on the Admission Test for Graduate Study in Business. If the grade-point average is between 2.4 and 2.7, the Admission Test for Graduate Study in Business must be 490 or above.
2. Graduate study in accounting presumes a minimal preparation in economics and business, including the following areas (undergraduate credit can be applied). In certain cases, these areas may be satisfied within the M.S. program upon approval of the Director of Graduate Studies:

	Crs.
Principles of Economics	6
Principles of Accounting	6
Statistical Method	6
Business Finance	3
Marketing	3
Management	3

Additional minimal preparation is one course each in intermediate accounting, cost accounting, and income taxation.

3. A minimum of 30 semester hours must be presented in courses carrying graduate credit.

At least 18 semester hours must be in courses reserved exclusively for graduate students and at least 12 of these must be in accounting.

4. The course requirements are:
 - a. One course in each of the following fields:
Advanced Managerial Accounting
Income Taxation
Attest Function
Accounting Theory
 - b. At least six semester hours of graduate credit outside the Department of Accounting, three of which must be in Economics.
 - c. A course in Computer Science or Data Processing.
5. The candidate must submit evidence of competence in statistics, as follows: six hours of minimal preparation in statistics, and three hours in an approved statistics course numbered 400 or higher.
6. Minimal average of grade B in all courses attempted while enrolled in Graduate School.
7. Successful completion of a comprehensive examination.

BUSINESS ADMINISTRATION

Graduate Faculty: Professors John Douglas, Michael Etzel (Chairman of the Department of Business Administration), Joseph Massie, Lawrence Tarpey (Coordinator of Graduate Studies). Associate Professors Philip Berger, James Donnelly, James Gibson, Andrew Grimes, John Ivankevich, Herbert Lyon, Martin Solomon.

Associate Members: Assistant Professors Keith Johnson, William Sartoris, Donald Shannon, Lynn Spruill, Bruce Walker, Marc Wallace.

The Degree of Master of Business Administration

1. Admission to this program is open to students who hold a bachelor's degree from any accredited college or university, with an undergraduate grade-point average of 2.7 or above and 450 or above on the Admission Test for Graduate Study in Business. If grade-point average is between 2.4 and 2.7, the Admis-

sion Test for Graduate Study in Business must be 490 or above.

2. Graduate study in business 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.B.A. program upon approval of the Director of Graduate Studies. The student coming into the program should have minimum exposure in the following areas:
Principles of Economics
Principles of Accounting
Statistical Method
Business Finance
Marketing
Management
Legal Environment Business Policy
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 Advanced Business Management	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
	30

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

Additional requirements are:

1. Residence for at least two semesters at the University of Kentucky as a full-time student, or its equivalent as a part-time student.
2. Minimal average of grade B in all courses attempted while enrolled in Graduate School.
3. Successful completion of a comprehensive final examination.

The Degree of Doctor of Business Administration

The basic purpose of the program leading to

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

Objectives:

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

Requirements:

1. Background Training in Business and Business Related Areas.

The D.B.A. is designed to provide specialization beyond the master's level. The educational background of each candidate will be reviewed by an admissions committee which will identify any deficiencies. In most cases, an M.B.A. from an accredited institution (A.A.C.S.B. accreditation) provides the background.

Applicants with previous graduate credits are evaluated generally according to the following rules, but each case is individually examined. A minimal grade-point average of 3.2 is required on all previous graduate credits. Also, students without ATGSB scores must take these exams before admission, with minimal score of 500.

2. Core Requirements (24 credit hours):

- a. Six hours of course work in administrative science and management 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 Microeconomic 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 from the following fields:

Accounting
Finance
Management and Organizational Behavior
Management Science
Marketing
Manpower and Human Resource
Administration

The minor field will consist of at least six hours of graduate credit course work from the above fields or from an outside department closely related to the major field. This course work must be approved by the Graduate 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.

ECONOMICS

The Degree of Master of Science In Economics

Graduate Faculty: Professors Carl Cabe, Virgil Christian, H. W. Hargreaves, Charles F. Haywood, Charles Hultman, Joseph Krislov, Don Soule, Robert Stroup (Chairman of Economics), Hirofumi Shibata. Associate Professors M. M. Ali, Richard Gift (Coordinator of Graduate Studies), Stuart Greenbaum, Curtis Harvey, John Madden, Randolph McGee, David Richardson, David Ross, William Stober.

Associate Members: Assistant Professor Stuart Schweitzer.

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.

Recommended minimal undergraduate preparation: six hours of intermediate theory, six hours of statistics, and college algebra-trigonometry. 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 and 661, Economic Theory, and ECO 662, Research.
2. Successful examination in one modern foreign language or competence in mathematical sciences evidenced by nine hours of approved course work.
3. Success in a final examination.
4. Minimal average of grade B in all courses attempted for graduate credit.

The Degree of Master of Arts In Economics

Objectives:

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

Requirements:

1. Recommended minimal undergraduate preparation—six hours of intermediate theory, six hours of statistics, and six hours of college mathematics.

2. A minimum of 30 hours of graduate credit courses.
 - a. At least 24 of the 30 hours must be in courses reserved exclusively for graduate students.
 - b. ECO 590, Mathematical Economics (or its equivalent), ECO 660 and 661, Economic Theory.
 - c. One of the basic courses (600 or 700 level) in each of three of the elective fields from the Ph.D. program.
 - d. ECO 662, Research.
3. Successful examination in one modern foreign language or competence in mathematical sciences, evidenced by nine hours of approved course work, six hours of which must be in statistics courses numbered 400 or higher.
4. Success in a final examination.
5. Minimal average of grade B in all courses attempted for graduate credit.

The Degree of Ph.D. In Economics

Objectives:

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 his 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.

Requirements:

Work for the degree of Doctor of Philosophy in Economics must conform to the general re-

quirements of the Graduate School. Although there is no specific course work required in the Ph.D., the student must develop a depth of understanding in the following areas and the equivalent of the material in the following courses:

1. Economic Theory
ECO 590, Introduction to Mathematical Economics
ECO 660, Advanced Microeconomic Theory
ECO 661, Advanced Macroeconomic Theory
ECO 760, Seminar in Microeconomic Theory
ECO 761, Seminar in Macroeconomic Theory
2. The Elective Requirement: All Ph.D. students must complete three fields in economics in addition to the above. A sequence of two courses covers the minimum material necessary for each field.
ECO 671 and 771, International Economics
ECO 673 and 773, Economic Development
ECO 676 and 776, Labor Economics
ECO 679 and 779, Public Finance
ECO 682 and 683, Regional Economics
ECO 686 and 786, Monetary Economics
ECO 688 and 788, Mathematical Economics
ECO 692 and 792, Econometrics
ECO 665, 666, and 669, Economic Thought and History
3. Supporting Work: At least six hours of supporting course work must be selected. These courses of study must be approved by the student's Special Committee.
4. Competence in mathematical sciences, evidenced by nine hours of approved course work, six hours of which must be in statistics courses numbered 400 or higher.
5. Successful examination in one modern foreign language.
6. Qualifying Examinations
 - a. Written Examinations: Written examinations must be taken in each of the three elective fields after a departmental written examination in Economic Theory has been passed. All of these examinations are given three times a year.
 - b. Oral Examination for Candidacy: After passing the above written examinations, the student will have an oral examination on the areas of specialization.
7. The Dissertation: The dissertation will be based on original research on a significant topic. The dissertation will be defended in an oral examination.

ACCOUNTING

401 Accounting Theory.	(3)
403 Auditing.	(3)
408 Cost Accounting.	(3)
410 Accounting for Institutions and Regulated Industries.	(3)
416 Accounting for Business Combinations.	(3)
417 Income Taxation.	(3)
418 Controllershship.	(3)
419 Internship in Accounting.	(3)
422 Functions of Accounting.	(3)
515 C.P.A. Problems.	(3)
517 Tax Accounting Problems.	(3)
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 Accountametrics.	(3)
628 Accounting for Control and Planning.	(3)
701 Seminar in Accounting.	(3)
795 Independent Study in Accounting.	(1-6)

BUSINESS ADMINISTRATION

431 Contemporary Marketing Problems.	(3)
432 Marketing Strategy and Planning.	(3)
434 Market Research.	(3)
435 Analysis of Organizational Behavior.	(3)
439 Business Policy.	(3)
441 Business Law II.	(3)
446 Investments.	(3)
447 Life Insurance.	(3)
448 Property and Casualty Insurance.	(3)
450 Quantitative Analysis in Management.	(3)
456 World Business.	(3)
536 Applied Personnel Management.	(3)
537 Contemporary Problems in Industrial Relations.	(3)
551 Advanced Business Data Processing and Information Systems.	(3)
556 International Commercial Policy.	(3)
584 Financial Markets and Institutions.	(3)
585 Bank Management.	(3)
630 Advanced Marketing Management.	(3)
631 Consumer Behavior.	(3)
635 Managerial Economics.	(3)
636 Research and Report Writing.	(3)
637 Administrative Behavior.	(3)
638 Comparative International Management.	(3)
639 Advanced Business Management.	(3)

645 Corporate Financial Policy.	(3)
646 Investment Management.	(3)
650 Management Science I.	(3)
651 Topics in Optimization.	(3)
652 Production Management.	(3)
656 International Marketing.	(3)
730 Seminar in Marketing Theory.	(3)
735 Administrative Science I.	(3)
736 Administrative Science II.	(3)
745 Seminar in Financial Theory.	(3)
746 Seminar in Managerial Finance.	(3)
750 Management Science II.	(3)
751 Seminar in Management Science.	(3-6)
761 Seminar in Managerial Economics.	(3)
762 Research Methodology.	(3)
763 Research, Design and Analysis.	(3)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
771 Seminar in Business Administration.	(3)
781 Independent Work in Business Administration.	(1-6)

ECONOMICS

461 Market Structure and Anti-Trust Policy.	(3)
462 Seminar in Economic Theory.	(3)
463 Analysis of Business Conditions.	(3)
465 Comparative Economic Systems.	(3)
466 Seminar in Comparative Systems.	(3)
467 The Economic Evolution of the North Atlantic Community.	(3)
468 Seminar in Economic History.	(3)
469 History of Economic Thought.	(3)
471 International Economics.	(3)
472 Seminar in International Economics.	(3)
473 Economic Development.	(3)
474 Seminar in Economic Development.	(3)
477 Labor Economics.	(3)
478 Seminar in Labor Economics.	(3)
479 Public Finance.	(3)
480 Seminar in Public Finance.	(3)
481 Collective Bargaining.	(3)
483 Regional Economics.	(3)
484 Seminar in Regional Economics.	(3)
485 Monetary Economics.	(3)
486 Seminar in Monetary Economics.	(3)
491 Survey Sampling Design.	(3)
493 Social and Cultural Determinants of Economic Growth and Development.	(3)
590 Introduction to Mathematical Economics.	(3)
592 Introduction to Econometrics.	(3)
594 Transportation.	(3)
595 Social Accounting.	(3)

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|---|-----|--|--------|
| 660 Advanced Microeconomic Theory. | (3) | 687 History and Theory of Money and Prices. | (3) |
| 661 Advanced Macroeconomic Theory. | (3) | 688 Mathematical Economics-Micro Theory. | (3) |
| 662 Research Methods and Procedures in Economics. | (3) | 692 Econometrics I. | (3) |
| 665 History of Economic Thought I. | (3) | 696 Soviet Area Economics Seminar. | (3) |
| 666 History of Economic Thought II. | (3) | 760 Seminar in Microeconomic Theory. | (3) |
| 667 Seminar in Historical Studies in Economic Change. | (3) | 761 Seminar in Macroeconomic Theory. | (3) |
| 668 American Economic Change in Historical Perspective. | (3) | 768 Residence Credit for the Master's Degree. | (1-6) |
| 671 International Economics Seminar I. | (3) | 769 Residence Credit for the Doctor's Degree. | (1-12) |
| 672 International Conflict and Conflict Resolution. | (3) | 771 International Economics Seminar II. | (3) |
| 673 Seminar in Economic Development I. | (3) | 773 Seminar in Economic Development II. | (3) |
| 674 Agriculture and Economic Development. | (3) | 776 Economics of Trade Unionism and Labor Law. | (3) |
| 676 Labor Markets and Wage Determination. | (3) | 779 Seminar in Public Finance II. | (3) |
| 679 Seminar in Public Finance I. | (3) | 783 Seminar in Regional Economics. | (3) |
| 682 The Economics of Spatial Relations. | (3) | 786 Seminar in Monetary Theory and Policy. | (3) |
| 683 Economics of Growth and Development in Regions and Urban Areas. | (3) | 788 Mathematical Economics-Macro Theory. | (3) |
| 686 Advanced Money and Banking. | (3) | 791 Problems in Econometrics. | (3) |
| | | 792 Econometrics II. | (3) |
| | | 793 Seminar in Econometrics. | (3) |
| | | 796 Seminar. | (1-6) |
| | | 797 Research Problems in Economics. | (1-6) |

Dentistry

Graduate Faculty: Professors Harry Bohannon (Dean), Emmett Costich, James Little, Alvin Morris, William Proffit (Director of Graduate Studies), Sheldon Rovin.

Associate Members: Associate Professors Roland Duell, Thomas Mullaney, Assistant Professor Herman Blair.

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 in orthodontics, integrated with additional basic science and research experience. The first year is largely de-

voted to clinical training, lectures and seminars. The second and later years will be a continuation of clinical orthodontics, 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 and (4) passage of a comprehensive oral examination. Foreign language credit is not required.

ORT 610 <i>Cranio-Facial Form.</i>	(3)
ORT 620 <i>Oral-Pharyngeal Function, Part I.</i>	(2)
ORT 621 <i>Oral-Pharyngeal Function, Part II.</i>	(2)
ORT 660 <i>Orthodontic Seminar-Clinic.</i>	(2)
ORT 661 <i>Orthodontic Seminar-Clinic.</i>	(3)
ORT 700 <i>Orthodontic Seminar.</i>	(1)
ORT 750 <i>Research in Orthodontics.</i>	(1-5)
ORT 768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
CDS 550 <i>Research Methodology and Instrumentation.</i>	(2)

CDS 611 <i>Child Growth and Development, Part I.</i>	(2)
CDS 612 <i>Child Growth and Development, Part II.</i>	(1)
CDS 631 <i>Dental Care for the Chronically Ill and Handicapped Child.</i>	(2)
CD 655 <i>Practice Environment and Practice Management.</i>	(1)
ODM 610 <i>Developments in Oral Medicine.</i>	(2)
OP 651 <i>Patho-Physiology of Oral Disease.</i>	(3)
OS 651 <i>Anatomical Relationships in Surgery.</i>	(1)
ODO 631 <i>Principles of Dental Occlusion.</i>	(2)
PER 661 <i>Modern Concepts in Periodontics.</i>	(2)

Education

Associate Dean of Graduate Studies—

Morris Cierley

General Statement of Regulations Governing Graduate Work in the College of Education

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

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

Rank II certification 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, at least 12 must be in fields outside education.

Rank I certification is based upon a Planned Fifth Year program plus 30 semester hours of graduate work appropriate for the teacher, or 60 hours of appropriate graduate work including a 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 Dean, 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 Study.

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.

Plan A

1. A minimum of 24 semester hours of graduate work must be completed and a thesis must be presented.
2. At least 12 semester hours of graduate work must be in education.

3. At least 12 semester hours of graduate work must be in courses numbered 600 or higher.
4. At least 12 semester hours must be outside the field of education, except for majors in higher education, counseling and guidance, and vocational education other than business and home economics education. It is expected that students in these areas will have six hours outside education.
5. No student may satisfy more than one-half of the residence requirements for advanced degrees by part-time work. This limitation does not apply to intensive courses.
6. The total number of credits presented in education, undergraduate and graduate, must be at least 30 semester hours. (Exceptions are higher and adult education and school psychometry.)
7. A standing of 3.0 (an average of B) or better must be made on all graduate work.
8. Six semester hours (if approved by the graduate adviser) may be completed in other graduate schools and by extension from the University of Kentucky.
9. The Graduate Record Examination is required of all candidates for graduate degrees. It is to be taken the first semester the student is enrolled as a full-time student in the Graduate School. The National Teachers Examination is required of all candidates for the degree of Master of Arts in Education or Master of Science in Education except in the fields of higher and adult education and rehabilitation counseling. In exceptional cases an additional examination, either written or oral may be required. These examinations are to be taken just prior to or during the session in which the degree is to be conferred.
10. Students should meet the requirements for a teaching certificate. 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. (Exceptions are in higher and adult education, rehabilitation counseling, and psychometry.)

11. Students must apply to full-graduate standing before or during the semester during which they have earned 15 hours of graduate credit. They will not be so admitted without satisfactory scores on the Graduate Record Examination.

Plan B

1. A minimum of 30 semester hours of graduate work must be completed.
2. At least 12 semester hours of graduate work must be in education.
3. At least 15 semester hours must be in courses numbered 600 or higher. (See requirements 4 through 11 in Plan A for remaining requirements.)

Specialist Degree in Education

The Specialist Degree program is available to those students who wish to continue their graduate work for further specialization in a particular field. To be eligible for admission one must hold a Master's Degree, or equivalent in the field in which specialization is sought. The program is planned by a committee, and at least one-half the program must be completed AFTER formal admission.

Application should be made to the Coordinator of Graduate Studies in Education.

Doctor of Education Degree

The Doctor of Education Degree provides for a major in one of seven fields as follows:

1. Administration and Supervision
2. Curriculum and Instruction
3. Educational Psychology and Counseling
4. Higher and Adult Education
5. Social and Philosophical Studies in Education
6. Special Education
7. Vocational Education

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

1. No foreign languages are required for the Ed.D. degree.
2. A minimum of 72 credit hours is required beyond the baccalaureate with a distribution providing for:

- a. Completion of at least 21 credit hours within a single area of concentration. (See section on education for options.)
 - b. At least 18 additional credit hours in supporting departments within education, with a minimum of six hours in each of two departments outside the area of concentration.
 - c. At least 24 credit hours in disciplines outside education which are supportive to the area of concentration.
 - d. A minimum of nine credit hours in research tool studies appropriate for this program.
3. Applicants shall declare at least one area outside the area of concentration at the time their special committees are appointed in order to facilitate the appointment of two committee members from outside Education.

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

Doctor of Philosophy in Education

The Doctor of Philosophy Degree in the field of Education is offered only in educational psychology and counseling.

As materials for this Bulletin go to press a Ph.D. proposal in Physical Education has gone forward with approval at all levels except the final one. Students interested in this program should consult the Director of Graduate Studies or the Chairman of the Department of Health, Physical Education and Recreation.

Joint Doctor Programs

Joint doctoral programs are offered in education with the following universities:

1. Eastern Kentucky University
2. Morehead State University
3. Murray State University
4. Western Kentucky University

ADMINISTRATION AND SUPERVISION

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

The Department of Administration and Super-

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

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

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

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

The University of Kentucky is an active member of the University Council for Educational Administration, which was formed to promote, through inter-institutional cooperation, improvement in the professional preparation of administrative personnel. A number of services are available to graduate students through this membership.

The University is a partner with the University of Louisville and the Louisville Public Schools in the operation of the Urban Education Center, which provides a laboratory for research and development work in urban education. Internships for graduate students are available through the Center and can also 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, to the Bureau of School Services, 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 of Education degree
4. Information on Doctoral Study in Administration and Supervision
5. Summer Workshops Announcements
6. Information on Graduate Assistantships and Financial Aid.

- 502 *The Administration of Pupil Personnel.* (3)
- 601 *Administration of Educational Organizations.* (3)
- 602 *Organization and Administration of American Education.* (3)
- 603 *Constitutional and Legal Basis of Public School Administration.* (3)
- 604 *School Buildings and Equipment.* (3)
- 608 *Internship in Educational Administration and Supervision.* (3)
- 628 *Field Studies in Educational Administration and Supervision.* (3)
- 629 *The Principal.* (3)
- 633 *Administration and Supervision of Instructional Programs.* (3)
- 634 *Administration of Educational Personnel.* (3)
- 635 *Business Administration and Finance of Public Education.* (3)
- 639 *The Supervisor.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 771 *Seminar in Administration.* (1-3)
- 772 *Seminar in Education.* (1)
- 785 *Independent Work in School Administration.* (3)
- 792 *Research in Educational Administration and Supervision.* (3)

CURRICULUM AND INSTRUCTION

Graduate Faculty: Professors Harry Barnard (Chairman and Director of Graduate Studies in Secondary Education), James Moore (Director of Graduate Studies in Elementary Education), Theodore Mueller, Earl Rankin (Director of Graduate Studies in Reading). Associate Professors Ronald Atwood, William Peters, Virginia Rogers, Leland Smith.

Associate Members: Assistant Professors Daniel Arnold, Herbert Heger.

The Department of Curriculum and Instruction has a wide range of graduate programs at the master's specialist's and doctoral levels. These programs are designed to prepare specialists for teaching, supervising, and coordinating subject

matter areas at the elementary, junior high, and senior high level. The specialist and doctoral programs prepare leaders for both public schools and instructions of higher learning. Graduate specialization areas are available in a wide range of academic subject matter fields as well as educational media and technology and reading.

Master of Arts Degree in Elementary Education

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

Area I. Research Methodology

- EDP 522 Educational Tests and Measurement
- EDP 656 Methods of Educational Research
- EDP 657 Educational Statistics

Area II. The Psychology of Learning

- EDP 548 Educational Psychology
- EDP 658 Problems in Educational Psychology

Area III. Foundations in Education

- EDF 640 Philosophy of Education
- EDF 645 Foundations in Education
- EDF 650 History of Western Education
- EDF 651 History of Education in the United States
- EDF 661 Educational Sociology

Area IV. A Seminar in Instruction Devoted to the Method of Teaching. Any general course in methods or any specific course in methods in subject matter areas may be taken to meet this requirement.

Area V. A General Study of Curriculum Development.

- EDC 712 The Elementary School
- EDC 732 Principles of Curriculum Construction

Area VI. Advanced Study in Human Growth and Development

- EDP 600 Human Development and Behavior
- EDP 759 Identifying and Providing for Individual Student Needs

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

- EDC 540 The Analysis and Correction of Reading Disabilities
- EDC 619 Diagnosis of Reading Disabilities*
- EDC 620 Reading Remediation*
- EDC 641 A Study of Research and Theory in Teaching Reading in Elementary School
- EDC 642 A Study of Research and Theory in Teaching Language Arts in the Elementary School

*Enrollment in these courses should be limited to reading majors only.

Master of Arts Degree in Secondary Education

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

Area I. Research and Methodology*

- EDP 522 Educational Tests and Measurements
- EDP 656 Methodology of Education Research
- EDP 657 Educational Statistics

Area II. The Psychology of Learning**

- EDP 548 Educational Psychology
- EDP 602 Human Cognitive Learning
- EDP 658 Problems in Educational Psychology

Area III. Foundations in Education*

- EDF 640 Philosophy of Education
- EDF 645 Foundations in Education
- EDF 650
- or
- EDF 651
- or
- EDF 652 Any course in the History of Education
- EDF 655 Education in Other Nations
- EDF 661 Educational Sociology

Area IV. A Seminar in Instruction Devoted to the Method of Teaching*

Any general course in methods or any specific course in methods in subject matter areas may be taken to meet this requirement.

Area V. A General Study of Curriculum Development

- EDC 714 The Secondary School (for secondary school teachers only)*
EDC 717 The Junior High School (for junior high school teachers only)
EDC 732 Principles of Curriculum Construction*
EDC 735 The Core Program in the Secondary Schools

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

- EDP 600 Human Development and Behavior
EDP 601 Human Social Development
EDP 759 Identifying and Providing for Individual Student Needs

Area VII. Advanced Study in Reading

- ERC 540 Analysis and Correction of Reading Problems in the Classroom
EDC 643 A Study of Research Theory in Teaching Reading in the Secondary School
EDC 646 Organizing Reading Programs
EDC 619 Diagnosis of Reading Disabilities
EDC 620 Reading Remediation

(Enrollment in EDC 619 or EDC 620 is normally limited to Reading majors; however, other students may be admitted by the consent of the instructor.)

Master of Arts Degree In Elementary Or Secondary Education with Reading As An Area of Concentration

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

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 endorse-

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

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

ment as a "reading specialist." This endorsement will be added to a classroom teaching certificate upon completion of a Master's degree program with emphasis in reading which follows a specified period of preparation. The guidelines for this endorsement are as follows:

1. The prerequisites shall include:
 - a. A teaching certificate based upon the completion of a four-year program of preparation.
 - b. The completion of an approved master's degree program with emphasis in reading following the curriculum guidelines.
 - c. A minimum of three years of successful classroom teaching; however, one year of equivalent work which includes clinical experience may be substituted for one year of classroom teaching.
2. The endorsement for reading specialists shall be valid for the same teaching level as the basic teaching certificate which is endorsed.
3. The curriculum shall include an emphasis in reading and a minimum of 30 semester hours preparation according to the following distribution:
 - a. A minimum of 12 semester hours credit in graduate level reading courses with at least one course in each of the following:

EDC 641 A Study of Research and Theory in Teaching Reading in the Elementary School (for elementary majors)

or

EDC 643 A Study of Research and Theory in Teaching Reading in the Secondary School (for secondary majors)

EDC 619 Diagnosis of Reading Disabilities

EDC 620 Reading Remediation

One three credit hour reading course at the 600 or 700 level as an elective.
 - 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 Degree in Elementary Education, or the Master of Arts Degree in Secondary Education.
 - c. A minimum of 12 semester hours credit in courses (400 level or above) taken from areas outside the College of Education. These courses must be taken from the following areas:

- (1) Sociology
- (2) Speech and Hearing
- (3) Learning Theories
- (4) Perception
- (5) Communication
- (6) Linguistics
- (7) Literature for Children (for elementary majors)
- or
- (8) Literature for Adolescents (for secondary majors)
- (9) Personality
- (10) Mental Hygiene
- (11) Tests and Measurements
- (12) Child or Developmental Psychology (for elementary majors)
- or
- (13) Adolescent or Developmental Psychology (for secondary major)

- 521 *Materials and Methods in Teaching Mathematics in the 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)
- 538 *Advanced Arts and Crafts in the Elementary School.* (3)
- 539 *The Elementary Curriculum.* (3)
- 540 *Analysis and Correction of Reading Problems in the Classroom.* (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 Disadvantaged.* (3)
- 552 *Modern Educational Problems.* (3)
- 562 *Modern Educational Problems.* (3)
- 563-576 *Modern Educational Problems.*
(General Elementary Curriculum)
- 563 *Modern Educational Problems.*
(General Elementary Curriculum)
- 564 *Modern Educational Problems.*
(General Secondary Curriculum)
- 565 *Modern Educational Problems.*
(General Curriculum)
- 572 *Modern Educational Problems.*
(Vocational Education)
- 575 *Modern Educational Problems.* (Unclassified)

- 576 *Modern Educational Problems.* (Unclassified)
- 596 *Science in the Elementary School.* (3)
- 600 *Workshop in Reading.* (1-3)
- 606 *Instructional Television in the Classroom.* (3)
- 607 *Programmed Instruction in the Classroom.* (3)
- 608 *Applications of Instructional Design.* (3)
- 619 *Diagnosis of Reading Disabilities.* (3)
- 620 *Reading Remediation.* (3)
- 641 *A Study of Research and Theory in Teaching Reading in the Elementary School.* (3)
- 642 *A Study of Research and Theory in Teaching Language Arts in the Elementary School.* (3)
- 643 *A Study of 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)
- 670 *Advanced Study in the Teaching of Elementary School Mathematics.* (3)
- 680 *Internship in Teacher Education.* (6)
- 712 *The Elementary School.* (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)
- 735 *The Core Program in the Secondary Schools.* (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)
- 750 *Administration and Supervision of Public School Music.* (3)
- 751 *History and Philosophy of Music Education.* (3)
- 757 *College and Adult Reading.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 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)

EDUCATIONAL PSYCHOLOGY AND COUNSELING

Graduate Faculty: Professors James Barclay Gordon Liddle (Chairman and Director of Grad-

uate Studies). Associate Professors Dwight Auvenshine (Coordinator of Rehabilitation Counseling), Henry Cole, Joseph Finney, Timothy Smith, Judith Worell.

Associate Members: Associate Professor Raymond Wilkie. Assistant Professors William Bramble, Robert Harmon, David Larimore, Louise Musser, William Stilwell.

The Department of Educational Psychology and Counseling offers the following degrees: Master of Arts in Education, Master of Science in Education, the Specialist in Education (Ed.S), the Doctor of Education (Ed.D.), and the Doctor of Philosophy (Ph.D.).

Within the degree programs there are a number of specializations possible. 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 full graduate standing in any of these programs not only includes demonstrated skills in the academic area, but a judgment by the faculty of the area program that the candidate possesses the personal and social skills requisite for completing the skills associated with the program and the advanced degree.

Master of Arts Degree In Education— Guidance and Counseling

Two options are open to candidates interested in this degree program. They are: concentration in elementary guidance and counseling, and concentration in secondary guidance and counseling. The programs in elementary and secondary guidance and counseling are designed to prepare individuals with a teaching certificate for guidance and counseling functions in public schools.

Ordinarily, applicants for these programs will have a regular teaching certificate at the elementary or secondary level, and one year of teaching experience. Applicants lacking these qualifications who wish to obtain the degree and be certified for school work must complete teacher education and expect to complete a one-year internship at the appropriate school level. The curriculum for these programs matches the State guidelines in the areas of elementary and secondary counseling. These programs provide learning experiences in each of the required competency areas. The programs vary from 33 to 34 graduate hours in addition to six to nine hours of course prerequisites in introductory psychology, testing, and personality theory.

Master of Arts Degree in Education School Psychological Diagnostician

This program is designed to prepare individuals to function at the first level of school psychology services. It meets the guidelines for the State Certificate as a School Psychometrist. The program consists of a varying amount of graduate and undergraduate work. It is variable because applicants can enter the program with two backgrounds: either (1) a Bachelor's degree in teaching field and certification for that field, or (2) a Bachelor's degree in psychology. In either case, the work of the school diagnostician requires a depth of background in psychology. Students with a background in psychology can expect to complete the graduate program in about 39 graduate hours of work. Students lacking a background in psychology should be prepared to complete this work. Completion of the program also requires a six months internship in school psychological work. This internship is counted in the hours listed above.

Master of Arts Degree in Education Rehabilitation Counseling

This curriculum was designed in accordance with guidelines provided by the national professional associations in rehabilitation counseling. Successful completion of the program fulfills the Kentucky certification requirements in rehabilitation counseling. It does **not** meet certification requirements for school counseling.

Required courses:

- ANA 206 Elementary Anatomy
- EDP 521 Introduction to Vocational Rehabilitation
- EDP 522 Educational Tests and Measurements (or EDP 659 Advanced Educational Measurements, or PSY 535 Psychological Testing)
- EDP 641 Psychological Measuring Instruments (or EDP 653 Appraisal Procedures in Guidance Practice)
- EDP 652 Counseling Theory and Techniques
- EDP 656 Methodology of Educational Research
- EDP 657 Educational Statistics
- EDP 661 Supervised Practice in Counseling
- EDP 664 Psycho-Social Aspects of Disability
- EDP 666 Occupational and Educational Information in Counseling (or EDP 702 Career Develop-

Education Technician

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EDS 527 Survey of Physical and Neurological Defects

EDP 665 }
EDP 777 } Internship Block to be Taken in
EDP 782 } the Last Semester

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

Master of Science Degree in Education

The master of science degree is offered by the Department for individuals who are not seeking a State certificate in counseling, psychometry or rehabilitation counseling, but wish to complete a professional sequence of courses leading to specific skills in educational psychology and/or counseling. Individuals who are interested in specializing in educational psychology, human development, measurement, research in education or non-public school counseling may obtain this degree. The program is flexible and tailored to individual needs. It is planned in consultation with an adviser. It consists of 30 hours of graduate work plus a thesis.

The Ed.S. Degree Program

The Ed.S. degree program is designed for post-master's degree students who wish to complete a planned course of enrichment studies leading to further competencies in a specific area or areas of educational psychology and counseling.

Ordinarily, 30 semester hours beyond the Master's degree are required for completion of this degree. A written paper or thesis is required of students completing this degree. Usually, students completing the Ed.S. are not candidates for the Ed.D. or Ph.D. programs. The program is planned by a committee, and at least one-half of the program must be completed **after** formal admission to the program.

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.

Doctor of Philosophy

The Ph.D. program is offered in the field of educational psychology and counseling. It consists of a departmental major, supporting work in related areas outside the College of Education, and appropriate work in other departments of the College of Education. One foreign language is required and a full-time supervised one-year internship.

There are various concentrations possible within the Ph.D. program. Representative of these are: (1) learning and cognition; (2) human development and social processes; (3) counseling psychology; (4) appraisal and assessment; (5) measurement, evaluation and design; and (6) school psychology.

For further information on these programs or degrees contact the Director of Graduate Studies in the Department of Educational Psychology and Counseling.

- 518 *Mental Hygiene.* (3)
- 519 *The Elementary School Pupil.* (2)
- 520 *The Secondary School Pupil.* (3)
- 521 *Introduction to Vocational Rehabilitation (Counseling and Guidance).* (3)
- 522 *Educational Tests and Measurements.* (3)
- 548 *Educational Psychology.* (3)
- 600 *Human Development and Behavior.* (3)
- 601 *Human Social Development.* (3)
- 602 *Human Cognitive Learning.* (3)
- 605 *Fundamentals of Guidance.* (3)
- 640 *Practice in Testing: Intelligence Tests.* (4)
- 641 *Psychological Measuring Instruments.* (3)
- 649 *Group Guidance Problems and Practices.* (3)
- 650 *Diagnosis and Counseling in Counseling Psychology.* (3)
- 652 *Counseling Theory and Techniques.* (3)
- 653 *Appraisal Procedures in Guidance Practice.* (3)
- 656 *Methodology of Educational Research.* (3)
- 657 *Educational Statistics.* (3)
- 658 *Problems in Educational Psychology.* (3)
- 659 *Advanced Educational Measurement.* (3)
- 660 *Research Design and Analysis in Education.* (3)
- 661 *Supervised Practice in Counseling.* (3)
- 664 *Psycho-Social Aspects of Disability.* (3)
- 665 *Practicum in Counseling Psychology.* (3)
- 666 *Occupational and Educational Information in Guidance.* (3)
- 701 *Behavior Modification in Education.* (3)
- 702 *Career Development: Research, Theories and Practices.* (2-3)
- 707 *Multivariate Analysis in Educational Research.* (3)

747 Seminar in Reading.	(3)
748 Psychology of Reading.	(3)
759 Identifying and Providing for Individual Student Needs.	(3)
762 Organization and Administration of Guidance Services.	(3)
763 Research and Evaluation in Guidance.	(3)
765 Independent Work in Counseling and Guidance.	(2)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
777 Seminar in Counseling and Guidance.	(3)
778 Seminar in Educational Psychology.	(3)
782 Independent Work in Educational Psychology.	(3)

HEALTH, PHYSICAL EDUCATION AND RECREATION

Graduate Faculty: Professors Joseph Gruber, Ernst Jokl, Earl Kauffman, Alan Stull (Chairman). Associate Professors Don Kirkendall (Director of Graduate Studies), Pentti Teräslinna.

Associate Members: Assistant Professors Elsie Burton, Alfred Reece.

The Department of Health, Physical Education and Recreation offers graduate work toward the Master of Science Degree with an area of concentration in one of the following: health and safety education, physical education, or recreation and park administration. Candidates may select, subject to the approval of the Department, either a thesis (Plan A) or a non-thesis option (Plan B).

The major objective of the master's program in health, physical education, and recreation are twofold. First, every student is to acquire a knowledge of sound research procedures so that professional literature may be properly evaluated and significant findings incorporated into the work of the professional. Second, the program will permit the student to study in depth a specialized area within the field of health, physical education, or recreation.

The program needed to meet these objectives requires that each student become proficient in the use of scholarly tools. Statistics, research procedures, and independent scholarly investigation serve as a basic core. 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.

Applicants are expected to have the equivalent of a 21-hour minor in their respective field. More specifically, the prerequisites for graduate study in physical education are:

	Hrs.
Professional Orientation or History and Principles of Physical Education	2
Individual Sports, Dual Sports, Team Sports	10
Aquatics, Gymnastics and Dance 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 recreation and park administration the prerequisites are:

Interpretations of Leisure and Recreation	2
Recreation Program Planning and Leadership	2
Administration and Organization of Recreation	2
Introduction to Therapeutic OR Principles of Outdoor Recreation	2
Supervised Field Study in Recreation	3
Laboratory courses in the areas of: Sports, music, art, theater, camping or dance	

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

GENERAL REQUIREMENTS

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

	PLAN A	Hrs.
EDP 657 Educational Statistics or		
STA 670 Basic Statistical Analysis		
HPR 645 Measurement Theory		

HPR 644 Research Techniques Applied to Health, Physical Education and Recreation

Supporting Elective	3
HPR—Area of Concentration	12
Thesis Problem in Area of Concentration	6
	30

PLAN B

EDP 657 Educational Statistics or	
STA 670 Basic Statistical Analysis	
HPR 664 Research Techniques Applied to Health, Physical Education and Recreation	
HPR 782 Independent Research Project	
Supporting Electives	6
HPR—Area of Concentration	15
	30

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

486 Advanced Dressage.	(2)
491 Dance in Education.	(3)
520 Physiology of Exercise.	(3)
540 Organization and Administration of Physical Education.	(3)
545 Introduction to Tests and Measurements.	(3)
546 Physical Education Workshop.	(2)
547 Psychology of Sport and Physical Activity.	(3)
572 Kinesiology and Its Application.	(3)
579 Adapted Physical Education.	(3)
592 Choreography for Groups.	(2)
593 Dance Production.	(3)

GRADUATE COURSES FOR MEN AND WOMEN

610 Implementation of Recreation Services for the Ill or Disabled.	(3)
611 Therapeutic Applications of Recreation.	(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)
650 Curriculum and Program Development.	(3)
651 Facilities, Construction, and Equipment.	(2)
676 Current Issues in Recreation.	(3)
685 Administrative Practices in Recreation.	(3)
690 Organization and Administration of the Dance in Education.	(3)
720 Sports Medicine.	(3)

741 Current Studies and Trends in Health and Physical Education.	(3)
768 Residence Credit for the Master's Degree.	(1-6)
770 Seminar in Physical Education.	(3)
780 Seminar in Recreation.	(3)
782 Independent Research.	(3)

RECREATION

471 Outdoor Education Through Camping.	(2)
478 Senior Seminar in Recreation.	(3)
570 Landscape Design of Park and Recreational Areas.	(3)
571 Introduction to Therapeutic Recreation.	(3)
573 Administration and Organization of Recreation.	(3)

HIGHER AND ADULT EDUCATION

Graduate Faculty: Professors A. D. Albright, Collins Burnett (Chairman), Morris Cierley, George Denmark, Charles Elton (Director of Graduate Studies).

Associate Member: Assistant Professor Edgar Sagan.

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 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. Providing professional preparation for the following careers:
 - a. General administration—president, provost, 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, director of housing.
- c. Development officer—director of public relations, alumni relations or fund raising.
 2. Providing a major concentration for those who plan to teach and do research in a department of higher education in institutions offering this area of study.
 3. Providing introductory courses for students from other majors who plan to follow an academic career in a college or university.
 4. Serving as an academic resource for other departments of the University of Kentucky, for two-year and four-year colleges and other universities, for the Council on Public Higher Education of the Commonwealth of Kentucky, and for other state and federal agencies concerned with post-secondary education.
 5. Providing research and evaluation on such aspects of higher education as student characteristics, faculty behavior, administrative roles, institutional organization, curriculum design, the teacher-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 admission decision is made either in December or April and the policy of the faculty is to admit the most qualified students among those making application.

The Department offers the following two degrees.

1. Master of Science in Education (M.S. in Education)
Major emphasis is on higher education with course work in the following categories:

	Hrs.
Higher education	15
Research Design and Statistics	3
Electives in Education (outside major)	6
Electives outside Education	6

2. Doctor of Education (Ed.D.)
Each student's doctoral program is planned in consultation with his Special Committee. Program content for the doctoral student in education is selected from the following categories:

	Hrs.
Higher education	24
Research Design and Statistics	9
Electives in Education (outside major)	
with a minimum of six hours in each	

of two departments	15
Electives outside Education (all in one department)	24

The Department participates in 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. At least three committee members must be from the University of Kentucky.

Another joint program in which this Department participates is with the University of Kentucky College of Allied Health Professions. Both the Master of Science and the Ed.D. degrees are available to qualified applicants who possess the baccalaureate in one of the Allied Health areas, e.g., dental hygiene, medical technology, or physical therapy. These graduate programs are essentially the same as those described earlier and are intended to prepare instructional and administrative personnel for the allied health professions. The major difference is that the allied health specialty serves as the support area for the student's program.

Inquiries should be directed to: Director of Graduate Studies, Department of Higher and Adult Education, 111 Dickey Hall, University of Kentucky, Lexington, Kentucky 40506.

99 Orientation for Graduate Students.	(0)
500 Clinical and Laboratory Teaching.	(4)
501 Teaching Internship.	(3-12)
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 Junior College.	(3)
768 Residence Credit for the Master's Degree.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
798 Seminar in Higher Education.	(3)
799 Research Problems in Higher Education.	(3)

SOCIAL AND PHILOSOPHICAL STUDIES IN EDUCATION

Graduate Faculty: Professor Ellis Hartford. Associate Professors David Denton (Director of Graduate Studies), Willis Griffin, Richard Warren (Chairman).

Associate Members: Assistant Professors Clinton Collins, Suzanne Howard, Richard LaBrecque.

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, directed to:

1. The development of teachers and researchers with special competencies in social and philosophical studies.
2. Assistance in the preparation of education personnel.
3. Contributions of research based on special competence of this faculty.
4. Change and improvement in 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 competence 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 interdisciplinary perspective and/or to gain greater depth and scholarship. The Department represents a link between the humanities and social and behavioral sciences and the preparation of professional educators. It seeks the broadest perspective on education as an important area of human endeavor.

The Department offers a degree program at both the Master's and Doctoral level. It also provides a minor for candidates pursuing doctoral programs in other colleges at the University. While departmental course offerings reflect a range of special interests the student may find it useful to consider them as falling into two major areas: (1) philosophical-historical; and (2) sociological-anthropological-international.

- 532 *Race and Ethnic Relations.* (3)
- 533 *Introduction to the Philosophic Study of Education.* (3)
- 599 *International Studies in American Education.* (3)
- 640 *Philosophy of Education.* (3)
- 645 *Foundations 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)
- 655 *Education in Other Nations.* (3)
- 656 *International Development Education.* (3)
- 661 *Educational Sociology.* (3)
- 662 *Analysis of Educational Change.* (3)
- 663 *Field Research in Educational Change.* (3)
- 665 *Education and Culture.* (3)
- 724 *Epistemological Problems in Education.* (3)
- 725 *Analysis of Value Questions in Education.* (3)
- 750 *Problems in Educational Sociology.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 773 *Seminar in Foundations of Education.* (3)
- 778 *Seminar in History of Education in Kentucky.* (3)
- 785 *Independent Study in Social and Philosophical Problems in Education.* (3)

SPECIAL EDUCATION

Graduate Faculty: Associate Professors Edward Blackhurst (Director of Graduate Studies), M. C. Martinson (Chairman), Robert Mason, Judith Worrell.

Associate Members: Assistant Professors Patricia Cegelka, Michael Nelson.

Students may enroll for either degree or non-degree graduate programs in special education. Non-degree programs are designed primarily for those who are seeking Kentucky Provisional, Rank II or Rank I Teacher Certification in the following areas:

1. Certification in teaching the:
 - Educable Mentally Retarded
 - Trainable Mentally Retarded
 - Orthopedically Handicapped
 - Neurologically Impaired (Learning Disabilities)
 - Emotionally Disturbed
2. Certification in Speech Pathology and Audiology
3. Certification in Administration and Supervision of Special Education

The Degree programs that are offered lead to the Master of Arts, Educational Specialist 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 his previous background and career aspirations. It should be noted, however, that graduate degree programs emphasize a non-categorical approach to Special Education. That is, although students

may pursue one of the above mentioned teaching certification areas (number 1 above) in greater depth as part of their degree programs, they also receive training that will enable them to diagnose and remediate learning problems of other types of exceptional children, regardless of the handicapping condition. Following are brief descriptions of the various graduate degree programs.

Minimum requirements for the Master of Arts Degree are either (1) the completion of 30 semester hours of course work under Plan II or (2) 24 hours of course work and a thesis under Plan I 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

(At least 15 semester hours must be earned in courses at the 600 or 700 level.)

Students without a teaching certificate must meet deficiencies, including certification requirements, as outlined by their adviser, in addition to completing the 30 semester hours. Depending upon their educational background, students may obtain Rank II Certification concurrently with their Master's Degree. Students preparing for positions not requiring certification may petition for waiver of certification requirements upon application for admission to the program.

Candidates for the M.A. degree in Education with concentration in speech pathology and audiology are encouraged to meet the academic and clinical requirements for the Certificate of Clinical Competence from the American Speech and Hearing Association. Briefly, these requirements include: (1) 18 semester hours in courses that provide fundamental information applicable to the normal development and use of speech, hearing and language, (2) 42 semester hours in courses that provide information about and training in the management of speech, hearing and language disorders and that provide information supplementary to these fields, and (3) completion of 275 clock hours of supervised, direct clinical experience with individuals presenting a variety of disorders of communication. All 125 hours of requirement (1) and of requirement (3) may be fulfilled on the undergraduate level. However, 30 of the 42 hours of requirements (2) must be in courses acceptable toward a graduate degree.

M.A. candidates in speech pathology must complete at least 12 hours from the 600-700 level courses in speech pathology listed under special education.

See requirements for the Specialist in Education (Ed.S.) degree. Ed.S. programs are individually planned for in-depth study in an area of special education. An Ed.S. program that is unique to the University of Kentucky is a program to train administrators of Special Educational Materials Centers. 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.
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 Certification in an area of special education.

Assistantships and traineeships are awarded on the basis of (1) commitment to the field, as evidenced by previous work experience, references, and/or volunteer service; (2) prior academic record; and (3) financial need. Applications for financial assistance may be obtained from the Departmental Director of Graduate Studies.

500 <i>Speech Analysis and Perception.</i>	(3)
501 <i>Speech and Language Development.</i>	(3)
502 <i>Development and Evaluation of Instructional Materials in Special Education.</i>	(3)
505 <i>Education of the Trainable Mentally Retarded.</i>	(3)
523 <i>Language Disabilities of the Mentally Retarded.</i>	(3)
524 <i>Programs for the Adolescent Mentally Retarded.</i>	(3)
525 <i>Education of the Orthopedically and Neurologically Handicapped.</i>	(3)
526 <i>Education of the Educable Mentally Retarded.</i>	(3)

- 527 *Characteristics of the Orthopedically and Neurologically Handicapped.* (3)
- 530 *Characteristics of the Mentally Retarded.* (3)
- 558 *Problems in Special Education: (Variable Topic).* (1-9)
- 570 *Characteristics of Emotionally Disturbed Children.* (3)
- 577 *Speech Pathology: A Survey.* (3)
- 578 *Speech Pathology: An Introduction to Therapy.* (3)
- 579 *Stuttering.* (3)
- 583 *Speech Mechanisms.* (3)
- 584 *Introduction to Audiology.* (3)
- 587 *Audiometry.* (3)
- 591 *Aural Rehabilitation.* (3)
- 592 *Problems and Needs of the Hearing Impaired.* (3)
- 600 *Survey of Special Education.* (3)
- 601 *Behavioral Management of Exceptional Children.* (3)
- 602 *Administration and Supervision in Special Education.* (3)
- 610 *Educational Evaluation of Exceptional Children.* (3)
- 611 *Educational Remediation of Learning Disabilities of Exceptional Children.* (3)
- 612 *Advanced Practicum in Special Education.* (3-6)
- 613 *Articulation and Articulation Disorders.* (3)
- 614 *Voice and Voice Disorders.* (3)
- 617 *Cleft Palate and Cerebral Palsy.* (3)
- 627 *Practicum in Speech Therapy.* (3)
- 647 *Disorders of Language.* (3)
- 671 *Education of Emotionally Disturbed Children.* (3)
- 672 *Theories of Educating Emotionally Disturbed Children.* (3)
- 702 *Seminar in Speech Pathology.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 779 *Seminar in Special Education (Variable Topic).* (3)
- 789 *Independent Study in Special Education.* (1-6)
- 799 *Research Techniques in Special Education.* (3)

VOCATIONAL EDUCATION

Graduate Faculty: Professors Harold Binkley (Chairman and Director of Graduate Studies for Agriculture, Home Economics, and Vocational Education), Carl Lamar, Vernon Musselman (Director of Graduate Studies for Business Education).

Associate Members: Professor Leonard McDowell (Director of Graduate Studies for Industrial Education). Associate Professors Herbert Bruce, Bernard Fagan, Curtis Phipps, Edwin C. Riley (Director

of Graduate Studies for Distributive Education). Assistant Professors David McMurtry, Clayton Omvig.

The Department of Vocational Education offers programs leading to the Master's in Vocational Education, the Specialist in Education (Ed.S.) degree, and the Doctor of Education (Ed.D.) degree. These advanced degree programs are designed to prepare teachers at the master's level and to prepare candidates for leadership positions in vocational education—administration, curriculum teacher education, research, and vocational guidance.

In addition, the Department also 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 appropriate Director of Graduate Studies in 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 12 semester hours of graduate work must be taken in professional education. One course shall be taken from three of six areas—I through VI. This program qualifies the teacher for a Standard Certificate if he has completed a four-year undergraduate curriculum.

All Program Service Areas

Area II: Research

- EDP 522 Educational Tests and Measurements
- EDP 656 Methodology of Educational Research
- EDP 657 Educational Statistics

Area III: Advanced Study in Human Development

- SOC 521 Industrial Sociology
- SOC 542 Human Relations in Administration
- EDP 600 Human Development and Behavior
- EDP 739 Survey of Research in Human Development and Education
- EDP 759 Identifying and Providing for Individual Student Needs

Area IV: Psychology of Learning

- PSY 540 Industrial Psychology
- EDP 548 Educational Psychology
- EDP 658 Problems in Educational Psychology

Area VI: Foundations in Education

- EDF 640 Philosophy of Education
- EDF 645 Foundations of Education
- EDF 651 History of Education
- EDF 655 Comparative Education
- EDF 661 Educational Sociology (Same as SOC 661)

Agricultural Education

Area I: Curriculum Development

- EDV 672 Determining Content in Vocational Agriculture
- EDC 732 Principles of Curriculum Development

Area V: A Seminar in Instruction Devoted to Method in Teaching

- EDV 670 Method in Teaching Vocational Education
- EDV 675 Modern Problems in Agricultural Education
- EDV 678 Selecting Trading Materials
- EDV 679 Adult-Farmer Schools
- EDV 680 Directing Occupational Experience in Agriculture
- EDV 681 Teaching Farm Shop
- EDV 682 Education in Agriculture for Young Adults

Business Education

Area I: Curriculum Development

- EDV 615 Problems in Business Education
- EDV 621 The Business Curriculum
- EDV 626 Classification and Possible Use of Community Resources in Business Education
- EDC 714 The Secondary School
- EDC 732 Principles of Curriculum Department

Area V: A Seminar in Instruction Devoted to Method of Teaching

- EDV 511 Teaching Secretarial Subjects
- EDV 512 Teaching Bookkeeping and Accounting
- EDV 513 Teaching Office Practice, Clerical Practice, and Office Appliances
- EDV 615 Problems in Business Education
- EDV 618 The Social Business Subject in High School
- EDV 779 Seminar in Vocational Education

Distributive Education

Area I: Curriculum Development

- EDV 517 Determining Content in Distributive Education
- EDC 732 Principles of Curriculum Development

Area V: A Seminar in Instruction Devoted to Method of Teaching

- EDV 528 Techniques of Teaching Distributive Education
- EDV 526 Organization and Operation of Adult Programs in Distributive Education
- EDV 610 Simulated Occupational Experience Programs in Distributive Education
- EDV 670 Method in Teaching Vocational Education
- EDV 671 Youth Organizations in Vocational Education
- EDV 693 Supervision in Vocational Education
- EDV 695 Special Problems in Vocational Education
- EDV 779 Seminar in Vocational Education

Home Economics Education

Area I: Curriculum Development

- EDV 685 Home Economics Curriculum Construction
- EDC 732 Principles of Curriculum Construction

Area V: A Seminar in Instruction Devoted to the Method of Teaching

- EDV 683 Current Problems in Home Economics Education
- EDV 686 Evaluation in Home Economics Education
- EDV 693 Home Economics Supervision in Vocational Education
- EDV 687 Home Economics Supervision
- EDV 684 Current Trends in Home Economics Education
- EDV 779 Seminar in Vocational Education
- EDV 789 Independent Work in Vocational Education

Industrial Education

Area I: Curriculum Development

- EDV 678 Selecting Teaching Materials
- EDC 732 Principles of Curriculum Construction

Area V: A Seminar in Instruction Devoted to the Method of Teaching

- EDV 534 Organization and Operation of Part-time and Evening Classes
- EDV 518 Methods in Industrial Education (4 hours)
- EDV 529 Evaluation in Industrial and Distributive Education
- EDV 570 Method in Teaching Vocational Education
- EDV 537 Special Problems in Industrial Education
- EDV 693 Supervision in Vocational Education
- EDV 694 The Administration in Vocational Education
- EDV 779 Seminar in Vocational Education

Vocational Education

Area I: Curriculum Development

- EDV 517 Determining Content in Distributive Education
- EDV 621 The Business Curriculum
- EDV 672 Determining Content in Vocational Agriculture
- EDV 685 Home Economics Curriculum Construction
- EDC 732 Principles of Curriculum Development

Area V: A Seminar in Instruction Devoted to the Method of Teaching

- EDV 516 Problems of the Coordinator in Vocational Education
- EDV 518 Methods in Industrial Education
- EDV 523 Vocational Guidance
- EDV 528 Techniques of Teaching Distributive Education
- EDV 615 Problems in Business Education
- EDV 670 Method in Teaching Vocational Education
- EDV 693 Supervision in Vocational Education
- EDV 694 The Administration of Vocational Education

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.

Certification of Administrators, Supervisors, and Coordinators of Vocational Education

For certification as an administrator, coordinator, or supervisor of Vocational Education one

must complete a minimum of 15 semester hours of graduate level courses **above and beyond** the course requirements for the 10-year teaching certificate. Courses are to be selected from those listed below, including at least one course in each of the four curriculum areas.

Curriculum Areas and Courses

Sem.
Hrs.

Organization and Administration of Vocational Education

- EDV 535 Principles and Philosophy of Vocational Education 2
- EDV 694 Administration of Vocational Education 3
- EDV 779 Seminar in Vocational Education 1-3

Administration and Supervision of Education Personnel

- EDA 634 Administration of Educational Personnel (Required in this area) 3
- EDA 633 Administration and Supervision of Instructional Programs 3
- EDV 608 Internship in Vocational Education 3
- EDV 693 Supervision in Vocational Education 3

Program Planning, Research, and Evaluation in Vocational Education

- EDV 529 Evaluation on Industrial and Distributive Education 2
- EDV 695 Special Problems in Vocational Education 3
- EDP 656 Methodology in Educational Research 3
- EDP 660 Research Design and Analysis in Education 3

Vocational Guidance, Industrial Psychology, Human Relations

- 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

AGRICULTURAL EDUCATION

- 580 *Materials and Methods for Teaching Vocational Agriculture.* (3)
- 581 *Adult-Farmer Schools and Young-Farmer Courses in Agriculture.* (3)
- 583 *Experience Programs in Vocational Agriculture.* (3)
- 672 *Determining Content in Vocational Agriculture.* (3)
- 673 *Program Development in Vocational Agriculture.* (3)
- 675 *Modern Problems in Agricultural Education.* (3)
- 679 *Adult Education in Agriculture.* (3)
- 680 *Directing Occupational Experience in Agriculture.* (3)
- 681 *Teaching Farm Shop.* (3)
- 682 *Education in Agriculture for Young Adults.* (3)

BUSINESS EDUCATION

- 511 *Teaching Secretarial Subjects.* (3)
- 512 *Teaching Bookkeeping and Accounting.* (3)
- 513 *Teaching Typewriting and Clerical Practice.* (3)
- 514 *Teaching General Business Subjects in the Secondary Schools.* (3)
- 615 *Problems in Business Education.* (3)
- 618 *The Social Business Subjects in High School.* (3)
- 623 *Administration and Supervision of Business Education.* (3)
- 626 *Classification and Possible Use of Community Resources in Business Education.* (3)

BUSINESS AND OFFICE EDUCATION

(BOE is the abbreviation for these courses.)

- 445 *Office Administration and Services.* (3)
- 519 *Records Management.* (3)
- 556 *Business Research Reports.* (3)
- 640 *Advanced Methods in the Secretarial Subjects.* (3)

HOME ECONOMICS EDUCATION

- 586 *Teaching Home Economics in the Secondary School.* (3)
- 588 *Adult Education in Home Economics.* (3)
- 590 *Problems in Home Economics Education.* (3)
- 610 *Simulated Occupational Experience Program in Distributive Education.* (2-4)
- 683 *Current Problems in Home Economics Education.* (3)

- 684 *Current Trends in Home Economics Education.* (3)
- 685 *Home Economics Curriculum Construction.* (3)
- 686 *Evaluation in Home Economics Education.* (3)
- 687 *Home Economics Supervision.* (3)

VOCATIONAL EDUCATION

- 516 *Problems of the Coordinator in Vocational Education.* (2-3)
- 523 *Vocational Guidance.* (2-3)
- 535 *Principles and Philosophy of Vocational Education.* (2-3)
- 608 *Internship in Vocational Education.* (6)
- 641 *Appraisal of Current Literature in Vocational Education.* (3)
- 670 *Method in Teaching Vocational Education.* (3)
- 671 *Youth Organizations in Vocational Education.* (3)
- 678 *Selecting Teaching Materials.* (3)
- 693 *Supervision in Vocational Education.* (3)
- 694 *The Administration of Vocational Education.* (3)
- 695 *Special Problems in Vocational Education.* (3)
- 702 *Career Development: Research, Theories and Practices.* (2-3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 779 *Seminar in Vocational Education.* (1-3)
- 789 *Independent Work in Vocational Education.* (1-3)
- 799 *Research in Vocational Education.* (1-3)

DISTRIBUTIVE EDUCATION

- 515 *Problems in Distributive Education.* (2-3)
- 517 *Determining Teaching Content in Distributive Education.* (2-3)
- 526 *Organization and Operation of Adult Programs in Distributive Education.* (3)
- 528 *Technique of Teaching Distributive Education.* (2-3)

INDUSTRIAL EDUCATION

- 518 *Methods in Industrial Education.* (2)
- 524 *Modern Industrial Analysis.* (2)
- 525 *Supervised Work Experience in Business or Industry.* (3)
- 529 *Evaluation in Industrial and Distributive Education.* (2)
- 534 *Organization and Operation of Part-time and Evening Classes.* (2)
- 536 *Surveys in Industrial Education.* (2)
- 537 *Special Problems in Industrial Education.* (2)
- 540 *Supervision of Student Teaching in Industrial Education.* (2)

Engineering

Associate Dean, Graduate Programs

John H. Lienhard

Requirements for Advanced Degrees in Engineering

The masters' degree in engineering may be obtained by satisfying the following requirements:

1. Twenty-four semester hours in graduate courses with an average standing of 3.0 or better.
2. An acceptable thesis.
(With departmental approval, a student may substitute six credits of graduate level course work, and other departmental requirements, for the thesis.)
3. Two-thirds of the work must be in the major subject.
4. There is no language requirement for these degrees.

The candidate must hold the B.S. degree in engineering or the equivalent. A thorough working knowledge of chemistry, physics, and mathematics is necessary. The degrees offered are Master of Science in Agricultural Engineering, Master of Science in Chemical Engineering, Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Engineering Mechanics, Master of Science (major in Engineering Mechanics), Master of Science in Mechanical Engineering, Master of Science in Metallurgical Engineering, Master of Science in Nuclear Engineering.

Requirements for the Ph.D. Degree

Doctoral work is offered in Agricultural Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering Mechanics, Mechanical Engineering, and Metallurgical Engineering and Materials Science. See the general requirements for the degree of Doctor of Philosophy.

One modern foreign language is required for the Ph.D. degree in Engineering.

AGRICULTURAL ENGINEERING

Graduate Faculty: Professors Blaine Parker

(Chairman and Director of Graduate Studies), Ira Ross, John Walker. Associate Professors Billy Barfield, Joe Bunn, Wiley Henson, Edward Smith, Gerald White. Assistant Professor C. T. Haan.

The Agricultural Engineering Department offers programs leading to the M.S. in Agricultural Engineering and the Ph.D. degree.

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

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

In the attainment of the above objectives the graduate student will combine courses in agricultural engineering, the physical sciences, other engineering fields, and the biological sciences in developing his 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.

400 *Farmstead Planning and Mechanization.* (3)

405 *Properties of Soils and Biological Materials as Related to Engineering.* (3)

406	<i>Environment for Plants and Animals as Related to Engineering.</i>	(3)
410	<i>Farm Power and Machinery.</i>	(3)
417	<i>Energy Sources and Machinery for Agriculture.</i>	(3)
427	<i>Functional Design of Agricultural Structures.</i>	(3)
430	<i>Farm Water Management.</i>	(3)
431	<i>Watershed Hydrology.</i>	(3)
437	<i>Design of Engineering Systems for Soil and Water Management.</i>	(4)
447	<i>Agricultural Processing and Electrification.</i>	(3)
450	<i>Special Problems.</i>	(1-3)
505	<i>Engineering Analysis.</i>	(3)
519	<i>Plant, Soil and Machinery Relationships.</i>	(3)
525	<i>Environmental Design for Biological Systems.</i>	(3)
535	<i>Soil and Water Conservation Engineering.</i>	(3)
548	<i>Advanced Agricultural Processing.</i>	(3)
606	<i>Micrometeorology.</i>	(3)
618	<i>Advanced Plant, Soil, and Machinery Relationships.</i>	(3)
628	<i>Advanced Design of Structures for Biological Systems.</i>	(3)
635	<i>Advanced Soil and Water Conservation Engineering.</i>	(3)
645	<i>Electromagnetic Radiation in Agricultural Engineering.</i>	(3)
648	<i>Energy and Mass Transfer in Agricultural Processing.</i>	(3)
658	<i>Instrumentation in Agricultural Engineering Research.</i>	(3)
660	<i>Similitude in Engineering.</i>	(3)
750	<i>Special Problems in Agricultural Engineering.</i>	(1-3)
768	<i>Residence Credit for the Master's Degree.</i>	(1-6)
769	<i>Residence Credit for the Doctor's Degree.</i>	(1-12)
775	<i>Seminar.</i>	(0)
795	<i>Thesis.</i>	(0)

BIOMEDICAL ENGINEERING

The central theme of the Biomedical Engineering Program at the University of Kentucky is the advancement of understanding in the life sciences through maximum interplay between engineering and biological insights. Graduate education in the program is designed to guide the student who wishes to participate in this interplay and achieve excellence in biomedical engineering research and teaching. Achieving this goal is made possible by provision of (1) an environment which promotes independent development and habits of lifelong scholarship; (2) a broad base of interdisciplinary knowledge and understanding from both didactic course work and research experience; and (3) experience and training in teaching.

The program offers the opportunity for an individualized plan with numerous options in a broad range of fields, through a combination of formal course work, interaction with scholars at the tutorial level, and independent research activities.

The training in biomedical engineering is offered under the auspices of the College of Engineering and the Colleges of the Medical Center. The Program is operated by a Council and Committee representing all concerned Colleges. The members are appointed by the Dean of Engineering, the Vice President and Deans of the Medical Center, and the Dean of the Graduate School.

Biomedical engineering activity at the University of Kentucky has evolved from more than 15 years experience and includes collaborative efforts of faculty and students in many departments of seven colleges (Arts and Sciences, Engineering, Medicine, Nursing, Allied Health, Pharmacy, and Dentistry) as well as personnel from 10 external groups including five other academic institutions. Within this broad spectrum of instructional and investigational activity, maximum flexibility is preserved and a complete range of options is available for both breadth and depth in education and research.

Research programs now underway include the study of physiological and behavioral responses to environmental 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. Coordination of the Program is facilitated by the proximity of the two colleges.

Participating students enroll in, and fulfill the requirements of, the department of their major interest. Guidance from the Council is obtained through interaction with the departmental Director of Graduate Studies and the student's Special Committee. Programs of study leading to Master's or Doctoral degrees may be conducted in fields such as physiology and biophysics, mechanical, electrical, chemical, civil, and metallurgical engineering and materials science. Further information may be obtained by writing to the Director of Graduate Studies in the student's area or to the Chairman, Biomedical Engineering Council.

CHEMICAL ENGINEERING

Graduate Faculty: Professors Robert Grieves (Chairman and Director of Graduate Studies),

Peter Skelland. Associate Professors William Conger, Charles Hamrin, Jr., Richard Kermode, Edward Moorhead, Thomas Schrodt.

Associate Member: Assistant Professor Robert Brett.

The Department of Chemical Engineering provides programs leading to the M.S. in Chemical Engineering and Ph.D. degrees. For the M.S. in Chemical Engineering, 24 hours of course work plus an acceptable thesis are required. 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 air quality engineering and water quality engineering. There is no language requirement for the M.S. in Chemical Engineering. For the Ph.D., a reading knowledge of German or Russian is required.

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

- Atmospheric pollution control
- Biomedical mass transfer and kinetics
- Electrochemical engineering
- Transfer processes
- Non-Newtonian fluid mechanics
- Process control
- Environmental engineering
- Chemical reactor design
- Thermodynamics
- Water pollution control

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

- 422 *Mass Transfer.* (3)
- 430 *Advanced Problems in Chemical Engineering.* (2)
- 431 *Chemical Engineering Laboratory I.* (2)
- 432 *Chemical Engineering Laboratory II.* (2)
- 455 *Chemical Engineering Process Design.* (4)
- 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)
- 562 *Process Control.* (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)
- 671 *Basic Electrode Processes in Electrochemical Engineering.* (3)
- 680 *Biochemical Engineering.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 771 *Seminar.* (0)
- 780 *Special Problems in Chemical Engineering* (3)

CIVIL ENGINEERING

Graduate Faculty: Professors S. F. Adams (Chairman), H. Gesund, B. O. Hardin, J. W. Hutchinson, R. A. Lauderdale, Don Wood (Director of Graduate Studies), F. D. Wright. Associate Professors J. A. Deacon, J. A. Dearing, Y. H. Huang, D. Kao.

Associate Members: Assistant Professors S. B. Biggers, V. P. Drnevich, E. G. Foree, S. T. Wang.

The Department of Civil Engineering offers the M.S. and Ph.D. with specialization in the following areas:

- Environmental, sanitary and water resource engineering
- Fluid mechanics, hydraulics and hydrology
- Mining and rock mechanics
- Planning and management of engineering systems
- Soil mechanics, soil dynamics and foundation engineering
- Structural engineering and structural systems
- Transportation engineering and transportation systems

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

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 amount of traineeships, fellowships and scholarships. Also it is sometimes possible to arrange a cooperative work program with a local engineering firm.

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

- 425 Soil Mechanics. (3)
- 435 Mine Plant and Machinery. (3)
- 480 Structural Mechanics II. (3)
- 515 Geometronics. (3)
- 523 Photogrammetry. (3)
- 531 Coal Preparation I. (3)
- 532 Coal Preparation II. (3)
- 533 Rock 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)
- 555 Engineering Economy. (3)
- 566 Public Health Engineering. (3)
- 568 Sanitary Engineering Laboratory. (3)
- 580 Theory of Structures III. (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.

- 621 Engineering Aspects of Surficial Soils and Landforms. (3)
- 624 Experimental Methods in Soil Mechanics. (3)
- 625 Advanced Soil Mechanics. (3)
- 626 Groundwater and Seepage. (3)
- 627 Soil Engineering for Transportation Facilities. (3)
- 628 Advanced Foundation Engineering. (3)
- 629 Soil Dynamics. (3)
- 631 Advanced Prospecting. (3)
- 633 Mine Organization. (3)

- 634 Advanced Mine Engineering. (3)
- 639 Air Transport Engineering. (3)
- 640 Highway Administration, Economics and Finance. (3)
- 641 Highway Traffic Characteristics. (3)
- 642 Highway Location Analysis. (3)
- 643 Urban Transportation Planning. (3)
- 644 Operational Effects of Geometrics in Transportation. (3)
- 645 Highway Design, Construction and Maintenance. (3)
- 647 Portland Cement Concrete and Bituminous Materials. (3)
- 652 Open Channel Flow. (3)
- 653 Advanced Hydrology. (3)
- 654 Hydraulic Structures. (3)
- 655 Water-Resources Planning. (3)
- 659 Advanced Sanitary Engineering Design I. (3)
- 660 Advanced Sanitary Engineering Design II. (3)
- 662 Fundamentals of Water Quality Control I. (3)
- 663 Water Quality Control Laboratory. (3)
- 664 Fundamentals of Water Quality Control II. (3)
- 668 Advanced Instrumentation for Water Resources Research. (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)
- 686 Advanced Metal Structures. (3)
- 690 Suspended 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 the Master's Degree. (1-6)
- 769 Residence Credit for the Doctor's Degree. (1-12)
- 771 Seminar. (0)
- 780 Special Design Problems in Civil Engineering. (1-6)
- 790 Special Research Problems in Civil Engineering. (1-6)

ELECTRICAL ENGINEERING

Graduate Faculty: Professors Earl Steele (Chairman and Director of Graduate Studies), Robert Cosgriff, Prasad Kadaba, Syed Nasar. Associate Professors M. M. Abbas, Frank Brown, Robert Boggess, Eugene Bradley, Raymond Distler.

Associate Members: Assistant Professors J. C. Collins, Roland Koch, Ronald Kuhler, Clayton Paul, Hsi-Han Yeh.

The Department of Electrical Engineering offers programs leading to M.S. and Ph.D. degrees. Areas of current research interests include: energy conversion; modern control theory; logic design; radio-frequency spectroscopy; microwave absorption studies; solid-state electronics; biomedical engineering; quantum electronics, communications and electromagnetics.

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.

401	Electronic Analog Computation.	(3)
415	Electromechanics I.	(3)
416	Electrical Engineering Laboratory III.	(2)
420	Engineering Analysis I.	(3)
435	Circuits III.	(3)
461	Electronic Circuits I.	(3)
462	Electrical Engineering Laboratory II.	(2)
467	Electric and Magnetic Fields.	(3)
468	Fields and Waves.	(3)
471	Electrical Controls I.	(3)
508	Electrical Engineering Laboratory IV.	(2)
511	Introduction to Communication Systems.	(3)
512	Digital Communication Systems.	(3)
517	Electromechanics II.	(3)
520	Engineering Analysis II.	(3)
523	Electrical Equipment Problems.	(2)
528	Electro Magnetic Radiation and Wave.	(3)
529	Fields in Biological Media.	(3)
537	Electric Power Systems I.	(3)
538	Electric Power Systems II.	(3)
560	Semiconductor Device Design.	(3)
562	Electronic Circuits II.	(3)
563	Communications Circuits Design.	(3)
564	Electronic Circuits III.	(3)
565	Electrical Engineering Laboratory V.	(2)
567	Introduction to Lasers and Masers.	(3)
569	Microwave and Coherent Optics Measurement.	(3)
572	Electrical Controls II.	(3)
580	Logical Design of Analog and Digital Systems.	(3)
581	Advanced Logical Design.	(3)
584	Computer Aided Design.	(3)
585	Molecular Engineering.	(3)
595	Independent Problems.	(1-3)

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)
615	Stability Theory of Control Systems.	(3)
616	Advanced Topics in Control.	(3)
621	Introduction to Antennas.	(3)
622	Advanced Antennas.	(3)
623	Lines and Wave Guides.	(3)
624	Solid-State Electronics.	(3)
625	Electromagnetic Propagation and Scattering.	(3)
626	Microwave Engineering.	(3)
627	Electromagnetic Fields.	(3)
631	Discrete Information Theory I.	(3)
632	Discrete Information Theory II.	(3)
633	Advanced Information Theory.	(3)
635	Pattern Recognition.	(3)
640	Continuous Stochastic Processes I.	(3)
641	Continuous Stochastic Processes II.	(3)
645	Communication Systems I.	(3)
646	Communication Systems II.	(3)
650	Electro-Optical Properties of Materials.	(3)
653	Optical Processing.	(3)
660	Electronic Device Design.	(3)
665	Integrated Circuits.	(3)
666	Advanced Topics in Solid State Electronics.	(3)
670	Quantum Electronics.	(3)
672	Molecular Properties in Electronic Devices.	(3)
683	Automata Theory.	(3)
711	Network Synthesis I.	(3)
712	Network Synthesis II.	(3)
768	Residence Credit for the Master's Degree.	(1-6)
769	Residence Credit for the Doctor's Degree.	(1-12)
771	Seminar.	(0)
783	Special Problems in Electrical Engineering.	(1-3)

ENGINEERING MECHANICS

Graduate Faculty: Professors Staley Adams, Oscar Dillon, Jr., Donald Leigh (Chairman and Director of Graduate Studies). Associate Professors Millard Beatty, Frank Fizzo, Richard Robe, David Shippy, Theodore Tauchert.

The Department of Engineering Mechanics provides programs for study and research leading to the Master of Science in Engineering Mechanics and the Doctor of Philosophy. The master's degree requires 24 credit hours of course work and a thesis, or in some circumstances with departmental approval, 30 hours of course work

without a thesis. 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 as well as from mathematics and physics.

Fields of concentration for study are (1) continuum mechanics, (2) materials and (3) dynamics. 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, and particle dynamics. Investigations in these areas have included theoretical, experimental and numerical methods and wave propagation and stability analyses.

For further information contact the Director of Graduate Study.

503 <i>Introduction to Continuum Mechanics.</i>	(3)
513 <i>Mechanical Vibrations.</i>	(3)
531 <i>Advanced Strength of Materials.</i>	(3)
532 <i>Experimental Stress Analysis.</i>	(3)
533 <i>Aircraft and Missile Structural Analysis.</i>	(3)
585 <i>Fourier Series and Boundary Value Problems.</i>	(3)
603 <i>Theoretical Plasticity I.</i>	(3)
604 <i>Theoretical Plasticity II.</i>	(3)
605 <i>Foundations of Inelasticity.</i>	(3)
606 <i>Theoretical Elasticity.</i>	(3)
607 <i>Advanced Inelasticity.</i>	(3)
613 <i>Nonlinear Oscillations.</i>	(3)
614 <i>Mechanics of Space Vehicles.</i>	(3)
632 <i>Theory of Elastic Stability.</i>	(3)
644 <i>Advanced Dynamics I.</i>	(3)
646 <i>Advanced Dynamics II.</i>	(3)
651 <i>Numerical Methods in Potential Theory.</i>	(3)
652 <i>Numerical Methods in Elasticity.</i>	(3)
653 <i>Methods of Applied Differential Equations.</i>	(3)
661 <i>Nonlinear Continuum Mechanics I.</i>	(3)
662 <i>Nonlinear Continuum Mechanics II.</i>	(3)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
769 <i>Residence Credit for the Doctor's Degree.</i>	(1-12)
780 <i>Special Problems in Engineering Mechanics.</i>	(3)

MECHANICAL ENGINEERING

Graduate Faculty: Professors Richard Birkebak, Merle Carter, Clifford Cremers (Director of Graduate Studies), Roger Eichhorn (Chairman), James Funk, John Lienhard (Associate Dean, Graduate Studies). Associate Professors James Lafferty, Shiva Singh.

Associate Members: Assistant Professors Uri Gat, Ottfried Hahn, G. J. Iddan, Charles Knapp.

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 and (6) systems and controls.

Preparation for graduate study in the department normally consists of a bachelor's degree in engineering. It is not necessary that this degree be in mechanical engineering. An undergraduate degree in chemistry, physics or mathematics combined with a strong interest in engineering topics is excellent preparation for graduate study in mechanical engineering.

The master's degree can be completed in one academic year plus a summer, but students holding assistantships usually find it necessary to spend about two years to complete all of the requirements. A non-thesis option for the M.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 one year of course work beyond the master's degree necessary preparation for the qualifying examination. The language requirements for the Ph.D. may be satisfied by either German or Russian.

Laboratories for research are located in Anderson Hall and the Wenner-Gren Aeronautical Research Laboratories. The latter is wholly devoted to research in biomedical engineering. The departmental laboratories are well-equipped with instrumentation and facilities for study in the areas of fluid mechanics, heat transfer, nuclear engineering and air pollution.

- 475 *Introduction to Nuclear Engineering.* (3)
 480 *Thermal Environmental Engineering.* (3)
 514 *Nuclear Reactor Analysis I.* (3)
 515 *Fuel Management and Economics of Nuclear Reactors.* (3)
 517 *Instrumentation for Research.* (3)
 530 *Gas Dynamics.* (3)
 540 *Dynamic Simulation of Mechanical Systems.* (3)
 564 *Propulsion System Design.* (3)
 567 *Air Pollution Engineering and Economics.* (3)
 583 *Biotechnology.* (3)
 590 *Elements of Aero-Space Technology.* (3)

Prerequisite for graduate work: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics.

- 611 *Nuclear Reactor Analysis II.* (3)
 615 *Plasma Dynamics.* (3)
 620 *Advanced Engineering Thermodynamics I.* (3)
 621 *Advanced Engineering Thermodynamics II.* (3)
 625 *Advanced Heat Conduction.* (3)
 626 *Advanced Heat Convection.* (3)
 627 *Radiation Heat Transfer.* (3)
 630 *Fluid Dynamics I.* (3)
 631 *Fluid Dynamics II.* (3)
 632 *Compressible Fluid Flow.* (3)
 634 *Turbulent Flows.* (3)
 642 *Advanced Kinematics of Machinery I.* (3)
 643 *Advanced Kinematics of Machinery II.* (3)
 645 *Systems Concepts and Analysis.* (3)
 647 *System Optimization.* (3)
 649 *Dynamic Analysis of Mechanical Systems and Components.* (3)
 651 *System Optimization II.* (3)
 663 *Energy Conversion Processes.* (3)
 664 *Experimental Methods in Nuclear Engineering.* (3)
 665 *Nuclear Reactor Dynamics.* (3)
 666 *Radiation Damage and Shielding.* (3)
 667 *Nuclear Reactor Design.* (4)
 685 *Biofluid Mechanics.* (3)
 768 *Residence Credit for the Master's Degree.* (1-6)
 769 *Residence Credit for the Doctor's Degree.* (1-12)
 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)

METALLURGICAL ENGINEERING AND MATERIALS SCIENCE

Graduate Faculty: Professors H. Conrad (Chair-

man and director of Graduate Studies), R. Swift. Associate Professors R. DeAngelis, P. Gillis, M. Leipold, Richard Mateer, J. Morris, P. Reucroft, G. Sargent.

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, Polymers and Dental Materials. Extensive and modern laboratory facilities located in Anderson Hall are available for experimental investigations in these areas.

Preparation for study in this department normally consists of a bachelor's degree in metallurgical engineering. However, an undergraduate degree in chemistry, physics, mathematics or another engineering discipline provides excellent preparation if coupled with a strong interest in the behavior of materials.

The Master's degree may be obtained by satisfying the usual college requirements. Only students with outside practical experience in metallurgy will ordinarily be allowed to substitute six credits of graduate level course work for the thesis. There is no language requirement for this degree.

The degree of Doctor of Philosophy is conferred upon a candidate who, after completing not fewer than three years of graduate work devoted to study in the broad field of Metallurgical Engineering or Materials Science, presents a satisfactory thesis, passes a comprehensive examination on his subject and chosen field and shows 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 to fulfill each student's specific

need by his Thesis Advisory Committee. Admission to the doctoral program requires the passing of a comprehensive preliminary examination, the nature of which is set by the student's Thesis Advisory Committee.

412 Electronic Properties of Materials.	(3)
443 Minerals Beneficiation.	(3)
444 Minerals Beneficiation Laboratory.	(1)
451 Metallurgical Thermodynamics II.	(3)
453 Metallurgical Kinetics.	(3)
461 Physical Metallurgy II.	(3)
463 Structure of Alloys II.	(3)
521 The Casting of Metals.	(3)
531 Powder Metallurgy.	(3)
535 Advanced Mechanical Metallurgy I.	(3)
536 Ceramic Engineering.	(3)
539 Nuclear Metallurgy.	(3)
550 Corrosion.	(3)
551 Advanced Chemical Metallurgy I.	(3)
552 Polymeric Materials.	(3)
566 Crystallography and X-ray Metallography.	(4)

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. Degrees offered are a Master of Science in Metallurgical Engineering and a Doctor of Philosophy in Physical Metallurgy.

632 Materials Science II.	(3)
633 Special Purpose Alloy Steels.	(3)
635 Advanced Mechanical Metallurgy II.	(3)
637 Materials Engineering.	(3)
641 Advanced Production Metallurgy.	(3)
650 Advanced Chemical Metallurgy II.	(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.	(1-6)
769 Residence Credit for the Doctor's Degree.	(1-12)
771 Seminar.	(0)
781 Special Problems, Literature and Laboratory.	(1-3)
782 Special Problems, Literature and Laboratory.	(3)

Home Economics

Graduate Faculty: Professors Abby Marlatt, Leonard Packett (Director of Graduate Studies for Nutrition and Food Science), Marjorie Stewart (Dean and Director of Graduate Studies). Associate Professors Linda Chen, David Payne. Assistant Professors Charlotte Bennett, Doris Tichenor.

Associate Members: Assistant Professors Lisa Barclay, Jose Concon, Joseph Fordham, Carolyn McKinney.

Requirements for the Degree of Master of Science in Home Economics

Students who are graduates of fully accredited institutions of higher learning may obtain the degree of Master of Science in Home Economics by satisfying the following requirements:

1. Plan A: The completion of 24 semester hours of graduate work with an average standing of 3.0 or better, and a thesis, or
Plan B: At the option of the major professor, the completion of 36 semester hours of graduate work with a standing of 3.0 or better, and no thesis requirement.
2. At least one-half of the hours must be on the 600 level or above.
3. No grade below a C may be counted under either plan.
4. One-half of the work must be in one department; the remainder may be in any other department or departments approved by the major professor.
5. There is no language requirement for the professional degree.

A final oral examination is given the candidate not later than eight days before the close of the semester in which the degree is to be secured. The candidate is expected to show a comprehensive knowledge of the subject matter related to the field of his major work and in case a thesis has been prepared to defend it.

The program of graduate study developed for each graduate student is based on his career objectives and previous academic background. Those without sufficient background or training will be expected to make up deficiencies indicated by the department.

HOUSING AND INTERIOR DESIGN

520	<i>Textiles II.</i>	(3)
530	<i>Advanced Interior Design.</i>	(2)
532	<i>Retail Job Analysis.</i>	(5)
534	<i>Decorative Textiles.</i>	(2)
536	<i>Interior Decoration Projects.</i>	(3)
537	<i>History of Furniture.</i>	(4)
538	<i>Materials and Methods in Interiors.</i>	(3)
593	<i>Special Problems in Housing and Interior Design.</i>	(1-3)
597	<i>Special Problems in Textiles.</i>	(1-3)
772	<i>Seminar in Textiles, Clothing, Costume Design, and Interior Design.</i>	(2)
783	<i>Special Problems in Interior Design.</i>	(1-3)
787	<i>Special Problems in Textiles.</i>	(1-3)

HUMAN DEVELOPMENT AND FAMILY RELATIONS

541	<i>Supervised Teaching in the Early Childhood Laboratory I.</i>	(3)
542	<i>Supervised Teaching in the Early Childhood Laboratory II.</i>	(3)
551	<i>Woman in Contemporary Society.</i>	(3)
552	<i>Organization and Administration of Early Childhood Education Programs.</i>	(3)
553	<i>The Child in His Family.</i>	(3)
555	<i>Creative Experiences and Concept Development: Preschool Years.</i>	(3)
557	<i>Infant Development.</i>	(2)
558	<i>Adolescence.</i>	(3)
595	<i>Special Problems in Child Development and Family Relationships.</i>	(1-3)
604	<i>The Disadvantaged Child in Early Childhood Programs.</i>	(3)
775	<i>Seminar in Child Development.</i>	(3)
785	<i>Special Problems in Child Development and Family Living.</i>	(1-3)

MANAGEMENT AND FAMILY ECONOMICS

462	<i>Personal and Family Finance.</i>	(3)
596	<i>Special Problems in Home Management.</i>	(1-3)
602	<i>Consumer Economics.</i>	(3)
662	<i>Advanced Home Management and Family Relationships.</i>	(3)
786	<i>Special Problems in Home Management.</i>	(1-3)

NUTRITION AND FOOD SCIENCE

Director of Graduate Study—Leonard Packett

Work leading to the master's degree must conform to general rules and regulations of the Graduate School and the College of Home Economics.

Bachelor of Science degree with a major in Foods, Nutrition, Life Science and/or Home Economics option with a background in biological and physical sciences will be required for admission. Those without sufficient background or training will be required to make up deficiencies indicated by the department. Emphases in Science, Education or Institutional Management are possible.

Programs are designed for individual interest and needs. The non-thesis option provides nutrition education emphasis useful to majors in public health nutrition, vocational education, dietitians, college teachers and extension specialists. Requirements for the Master of Science degree in Home Economics are: completion of 24 semester hours of graduate courses and a thesis or, at the option of the major professor and student, the completion of 36 semester hours of graduate work without a thesis.

Inquiries concerning the details of graduate programs (including work beyond the master's) as well as possible financial support of graduate students should be addressed to the Chairman of the Department of Nutrition and Food Science.

- 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)
- 771 *Seminar in Nutrition.* (2)
- 781 *Special Problems in Foods and Nutrition.* (1-3)
- 784 *Special Problems in Institution Management.* (1-3)

TEXTILES, CLOTHING AND MERCHANDISING

- 420 *Tailoring.* (3)
- 422 *Economics of Clothing.* (3)
- 520 *Textiles II.* (3)
- 523 *Socio-Psychological and Economic Aspects of Apparel.* (3)
- 524 *History of Costume.* (3)
- 529 *The Child and His Clothing.* (3)
- 532 *Retail Job Analysis.* (5)
- 534 *Decorative Textiles.* (2)
- 535 *Textiles and Design Study Tour.* (1-3)
- 592 *Special Problems in Clothing and Costume Design.* (1-3)
- 597 *Special Problems in Textiles.* (1-3)
- 772 *Seminar in Textiles, Clothing, Costume Design, and Interior Design.* (2)
- 782 *Special Problems in Clothing and Costume Design.* (1-3)
- 787 *Special Problems in Textiles.* (1-3)

GENERAL HOME ECONOMICS

- 575 *Community Analysis.* (3)
- 768 *Residence Credit for the Master's Degree.* (1-6)

Library Science

Graduate Faculty: Professor Lawrence Allen (Dean). Associate Professors Robert Cazden, Stuart Forth, Michael Harris, Herman Totten (Director of Graduate Studies).

Associate Member: Assistant Professor Charles Evans.

The College of Library Science offers three degrees, M.A., Plan A; M.A., Plan B; and MSLS. The degree requirements for these degrees are as follows:

I. M.A., Plan A Requirements

A. Course Requirements

1. 36 total credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory Courses (LS 500, 501, 502)
21 hours elective
6 hours thesis credit
3. 15 hours must be on the 600-700 level

B. Thesis

C. Modern Foreign Language—reading proficiency in French, German, or Russian (one required). Another language may be substituted by petition. This requirement may be satisfied by one of three methods:

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

D. Oral examination in defense of thesis

II. M.A., Plan B Requirements

A. Course Requirements

1. 36 credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory (LS 500, 501, 502)
6 hours—advanced bibliography or technical processing courses
6 hours—cognate courses on 500 level or above
15 hours—elective
3. 15 hours must be on the 600-700 level

B. No thesis required

C. Modern Foreign Language—as in M.A., Plan A

D. Exit Interview

III. MSLS Requirements

A. Course Requirements

1. 36 total credit hours, 30 of which must be graduate credit hours
2. 9 hours—Required Introductory Courses
27 hours—elective
3. 15 hours must be on the 600-700 level

B. No thesis required

C. No modern foreign language competency required

D. Exit Interview

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, catalog, and appropriate forms, contact Assistant Dean, College of Library Science.

PROFESSIONAL COURSES

500	<i>Library Science and Administration.</i>	(3)
501	<i>Library Operations.</i>	(3)
502	<i>Reference and Information Services.</i>	(3)
509	<i>Administration of Media Centers.</i>	(3)
510	<i>Children's Literature and Related Materials.</i>	(3)
511	<i>Literature and Related Materials for Young People.</i>	(3)
512	<i>School Library Practice.</i>	(3)
525	<i>Professional Field Experience.</i>	(3)
586	<i>Utilization of Educational Media.</i>	(3)
600	<i>Administrative Behavior in Library Management.</i>	(3)
601	<i>Technical Processing I.</i>	(3)
602	<i>Bibliography of Social Sciences.</i>	(3)
603	<i>Bibliography of the Humanities.</i>	(3)
604	<i>Bibliography of Science.</i>	(3)
605	<i>Introduction to Information Sciences.</i>	(3)
606	<i>Automation and the Library.</i>	(3)
608	<i>Methods of Research in Librarianship.</i>	(3)

609 Public Libraries.	(3)	628 Library Buildings.	(3)
610 Academic Libraries.	(3)	629 Public Library Systems.	(3)
611 Special Libraries I.	(3)	639 Organization and Administration of Youth Services in Public Libraries.	(3)
613 Library Systems Analysis.	(3)	640 Medical Librarianship.	(3)
614 Information Storage and Retrieval Systems.	(3)	641 Law Librarianship.	(3)
617 History of Books and Printing to 1800.	(3)	687 Multi-Media Materials.	(3)
618 Books for Adults.	(3)	700 Seminar: Library Organization and Management.	(3)
620 Rare Books Bibliography.	(3)	701 Seminar: Library Materials and Services for Children and Young People.	(3)
621 Special Collections.	(3)	702 Seminar in Printing and Publishing History.	(3)
622 Special Libraries II (by type).	(3)	703 Seminar: Technical Services.	(3)
623 Subject Bibliography.	(3)	704 Seminar: Education for Librarianship.	(3)
624 Technical Processing II.	(3)	705 Seminar: Information Sciences.	(3)
625 History of Books and Printing 1800 to the Present.	(3)	710 Independent Study in Library Science.	(3)
626 Government Publications.	(3)	711 Workshops in Librarianship.	(14)
627 History of Libraries.	(3)	768 Residence Credit for the Master's Degree.	(16)

Medicine

ANATOMY

Graduate Faculty: Professors Robert Benton, Ira Fowler, Lois Gillilan, Harold Parks (Chairman and Director of Graduate Studies). Associate Professors William Cotter, Harold Traurig, Miroslava Winer.

Associate Members: Associate Professors William Elwood, Roger Lambson, Stephen Smith. Assistant Professor Daniel Matulionis.

Professor Peter Bosomworth and Associate Professors William Gocheur and Norman Goodman are unassigned members of the Graduate Faculty from the College of Medicine.

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

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

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

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

- 503 *Independent Work in Anatomy.* (3)
- 511 *Introduction to Anatomy.* (4)
- 512 *Microscopy and Ultrastructure.* (3)
- 513 *Developmental Anatomy.* (2)
- 516 *Anatomy of the Nervous System.* (3)
- 529 *Concepts of Morphology.* (2)
- 531 *Combined Gross and Neuroanatomy.* (6)
- 532 *Combined Histology, Embryology, and Special Oral Microanatomy.* (6)
- 533 *Oral Histology.* (2)
- 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 the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)

BEHAVIORAL SCIENCE

Graduate Faculty: Professors Eugene Gallagher, Marion Pearsall, Robert Straus (Chairman and Director of Graduate Studies). Associate Professors John Haley, Philip Moody. Assistant Professor Russell Jones.

Associate Members: Judith Archambo, Thomas Garrity.

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 pro-

gram of courses and to culminate in a health-related topic for the doctoral dissertation. As far as possible, students in the concentration are provided office space in the Medical Center so that they may have ready access to resources and events.

2. An orientation to medical settings, including an enculturation to the social structure, attitudes, beliefs, values and objectives of health personnel and organizations, and the nature of behavioral science research in these areas.

3. An orientation to the several behavioral sciences; to their areas of overlap and interrelation as well as to their discrete contents, theories and methods.

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

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

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| 527 | <i>Society and Health.</i> | (3) |
| 529 | <i>Survey of Medical Anthropology.</i> | (3) |
| 546 | <i>Social Factors in Mental Health.</i> | (3) |
| 670 | <i>Seminar on Role Theory.</i> | (3) |
| 738 | <i>Seminar: Drug Use as Deviant Behavior.</i> | (3) |
| 761 | <i>Interpersonal Processes in Critical Situations.</i> | (3) |
| 764 | <i>Topical Seminar in Psychological Anthropology.</i> | (3) |
| 765 | <i>Research Problems in Medical Anthropology.</i> | (3) |
| 766 | <i>Concepts in Medical Sociology.</i> | (3) |
| 767 | <i>Research Problems in Medical Social Psychology.</i> | (3) |
| 772 | <i>Topical Seminar in Medical Behavioral Science.</i> | (1-3) |
| 790 | <i>Research in Medical Behavioral Science.</i> | (1-6) |

BIOCHEMISTRY

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

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 experi-

ence 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. A reading knowledge of two modern foreign languages, of which one should be German and the other French or Russian, should be acquired as an undergraduate. 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.

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| 401 | <i>Fundamentals of Biochemistry.</i> | (3) |
| 502 | <i>General Biochemistry.</i> | (3) |
| 517 | <i>Experimental Methods in Biochemistry.</i> | (4) |
| 610 | <i>Biochemistry of Lipids and Membranes.</i> | (3) |
| 611 | <i>Biochemistry and Cell Biology of Nucleic Acids.</i> | (3) |
| 612 | <i>Structures and Functions of Proteins and Enzymes.</i> | (3) |
| 618 | <i>Seminar in Biochemistry.</i> | (1) |
| 619 | <i>Seminar in Biochemistry</i> | (1) |
| 640 | <i>Research in Biochemistry.</i> | (1-15) |
| 769 | <i>Residence Credit for the Doctor's Degree.</i> | (1-12) |
| 780 | <i>Topics in Biochemistry.</i> | (1-3) |

CELL BIOLOGY

Graduate Faculty: Associate Professor Jesse Siskin.

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| 515 | <i>General Cell Biology.</i> | (3) |
| 611 | <i>Biochemistry and Cell Biology of Nucleic Acids.</i> | (3) |
| 710 | <i>Special Topics in Cell Biology.</i> | (2) |

PATHOLOGY

Graduate Faculty: Professor Daniel Weiss. Associate Professor Harmon Bickley.

While there is as yet no graduate program in pathology the department offers two courses

which are open to qualified graduate students. The permission of the department chairman is required prior to enrollment.

- 421 *Fundamental Human Pathology.* (4)
422 *Systemic Human Pathology.* (7)

PHARMACOLOGY

Graduate Faculty: Professors T. Z. Csaky (Chairman and Director of Graduate Studies), *T. D. Darby, H. A. Gordon, *K C. Huang, William Martin, Dean Morrow, Douglas Rees, *T. G. Scharff, W. J. Waddell Abraham Wikler. Associate Professors Donald Diedrich, James Flesher.

Associate Members: Assistant Professors Donald Jasinski, Ralph Miller.

The Department of Pharmacology offers M.S. and Ph.D. degrees in Pharmacology.

Pharmacology is the study of the actions of drugs upon living matter. Pharmacologists in modern society find careers as teachers in academic professions, as scientists engaged in research of problems related to pharmacology, and in developing new drugs along with evaluating drugs for their potential efficacy, toxicity, side effects, etc.

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 obtain a good basic training in mathematics, physics, chemistry and biological sciences. The Ph.D. program involves extensive research work under the supervision of appropriate staff scientists. At the present, special training can be obtained in fundamental pharmacodynamics, in neuropharmacology, psychopharmacology, and in gnotobiotic biology.

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.

*Joint appointment with University of Louisville.

- 521 *General Pharmacodynamics and Toxicodynamics.* (2)
522 *Pharmacology in Medicine.* (3)
541 *Biological Assay.* (4)
555 *Gnotobiotic Methodology.* (2)
610 *Seminar in Pharmacology.* (1)
612 *Quantitative Pharmacodynamics. Pharmacokinetics.* (2)
621 *Advanced Pharmacodynamics.* (2)
631 *Principles of Pharmacology, Lectures.** (5)
632 *Principles of Pharmacology, Laboratory.** (2)
633 *Advanced Pharmacology.** (4)
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)
664 *Advanced Molecular Pharmacology.* (2)
665 *Drug Receptor Interrelationship.* (1)
666 *Human Pharmacology.* (3)
670 *Clinical Psychopharmacology.* (2)
671 *Integrative Psychopharmacology.* (2)
680 *Applied Toxicology.* (5)
750 *Research in Pharmacology.* (1-5)
768 *Residence Credit for the Master's Degree.* (1-6)
769 *Residence Credit for the Doctor's Degree.* (1-12)
770 *Seminar in Toxicology.* (1)
790 *Research in Toxicology.* (1-5)

PHYSIOLOGY AND BIOPHYSICS

Graduate Faculty: Professors James Archdeacon, Louis Boyarsky, Joseph Engleberg, Ward Griffin, Fred Zechman (Chairman). Associate Professors Donald Frazier, Henry Hirsch, Ernest McCutcheon, Bertram Peretz, P. A. Thornton, David Wekstein (Director of Graduate Studies), James Zolman. Assistant Professor Daniel Richardson.

Physiology is the biological field concerned with function. It is, in fact, dynamic biology. The increase in knowledge in the field of physiology as well as the change in the nature and complexity of instrumentation necessary for experimentation and analysis of experimental data have lengthened doctoral programs in physiology or necessitated a restriction in the scope of the program.

The graduate program meets these problems in three stages:

1. Requirement of adequate physical, chemi-

cal and biological background before admission to the program or a reasonable plan to make up deficiencies that exist. In general, one year of physics, three years of chemistry, one year of biological science and mathematics through calculus are required. A reading knowledge of one modern foreign language is required of candidates for the Ph.D. degree.

2. A basic program covering one to two years to allow instruction in basic mammalian and cellular physiology and the correlated instrumentation including project type laboratory work.

3. Special training and research including a thesis in the areas of physiology in which the department has competence. These include neurophysiology, cardiovascular physiology, respiratory physiology, temperature regulation, developmental physiology, cellular physiology, physiological correlates of behavior. Special programs may be developed in biophysics, space physiology, and biomedical engineering.

Graduates of accredited colleges with a bachelor's degree in biology, zoology chemistry, physics, psychology, mathematics, or engineering may become candidates for a graduate degree in physiology.

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

502 <i>Principles of Physiology.</i>	(4)
503 <i>Experimental Methods.</i>	(2)
504 <i>Independent Work in Physiology.</i>	(2-4)
507 <i>Introduction to Endocrinology.</i>	(3)
511 <i>Medical Physiology.</i>	(7)
512 <i>Cellular Physiology.</i>	(4)
520 <i>Theoretical Biophysics.</i>	(3)
522 <i>Mathematical Biophysics.</i>	(3)
602 <i>Physiological Instrumentation I.</i>	(3)
603 <i>Physiological Instrumentation II.</i>	(3)
606 <i>Advanced Neurophysiology.</i>	(3)
627 <i>Proseminar in Physiological Psychology.</i>	(2)
630 <i>Advanced Topics in Physiology and Biophysics.</i>	(2)
660 <i>Systems Physiology.</i>	(3)
767 <i>Seminar in Physiological Psychology.</i>	(3)
768 <i>Residence Credit for the Master's Degree.</i>	(1-6)
769 <i>Residence Credit for the Doctor's Degree.</i>	(1-12)
774 <i>Graduate Seminar in Physiology.</i>	(1)
791 <i>Research in Physiology.</i>	(2-5)

RADIATION MEDICINE

540 <i>General Radiation Biology.</i>	(4)
545 <i>Radiation Hazards and Protection.</i>	(2)
546 <i>General Medical Radiological Physics.</i>	(2)
547 <i>Medical Radiation Imaging—I, Physical Aspects of Diagnostic Radiology.</i>	(2)
548 <i>The Physics of Radiation Therapy.</i>	(2)
640 <i>Biological Effects of Radiation.</i>	(3)
HRS 710 <i>Seminar in Bioradiation Sciences.</i>	(1)
740 <i>Mammalian Radiation Biology.</i>	(2)

TOXICOLOGY

Director of Graduate Study—Tihamer Z. Csaky

The Graduate Program in Toxicology is interdepartmental with members of the various faculties of the Medical Center, the College of Arts and Sciences, and the College of Agriculture participating. Both the M.S. (Plan A) and Ph.D. degrees are offered.

Toxicology, the science of poisons, is concerned with the interaction of chemical agents or changes in the physico-chemical environment 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.

Graduates of accredited colleges with baccalaureate degrees in the biological sciences, chemistry, or physics or professional degrees in medicine, dentistry, pharmacy, or veterinary medicine may apply for graduate study in the toxicology program. It is advisable that candidates have a good background in chemistry, physics, biological sciences, and mathematics. Students with other advanced degrees may be considered for admission. However, the number of credits and courses transferable will be considered on the merits of each individual case.

Since each candidate may be expected to have specific interests, the actual curriculum will be tailored to meet individual needs. Only one modern foreign language is required for the Ph.D. degree in Toxicology.

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.

Social Sciences Nursing

Graduate Faculty: Professors Loretta Denman (Director of Graduate Studies), Jean Hayter, Marion McKenna (Dean). Associate Professors Juanita Fleming, Frances Thomas.

Associate Members: Professors Virginia Lane Betty Rudnick.

The College of Nursing offers a master's program in nursing under Plan B to graduates of NLN accredited baccalaureate programs in nursing. The program is one calendar year in length and requires a minimum of 30 credits. There is no language requirement for this professional degree program.

The general Graduate School admission requirements apply; however, applicants are asked to submit Graduate Record Examination scores at the time of application for admission. The transcripts of all applicants not graduated from

NLN accredited baccalaureate programs in nursing will be evaluated individually. Nurse licensure is required and personal interviews will be arranged when feasible.

Eighteen credits in nursing plus three credits in Behavioral Science 772 are required of all students. The remaining credits may be selected from several designated areas with the consent of the adviser. The Master of Science in Nursing degree is awarded upon completion of the program requirements with a grade-point average of 3.0 or better.

610	<i>Concepts and Theories in Nursing.</i>	(6)
620	<i>Clinical Nursing I.</i>	(6)
630	<i>Clinical Nursing II.</i>	(6)
768	<i>Residence Credit for the Master's Degree.</i>	(1-6)
781	<i>Independent Study in Nursing.</i>	(1-3)

Pharmacy

PHARMACEUTICAL SCIENCES

Graduate Faculty: Professors David Guttman, Harry Kostenbauder (Director of Graduate Studies), Charles Lesshaft, Harry Smith, Joseph Swintosky (Dean). Associate Professors Norman Billips, Patrick DeLuca, Louis Diamond, George Digenis, Lewis Dittert, Milton Kornet, Mark Luckens.

Associate Member: Assistant Professor Gerald Sherman.

The College of Pharmacy offers M.S. and Ph.D. programs in Pharmaceutical Sciences, with areas of concentration in either Pharmaceutics (Physical Pharmacy or Biopharmaceutics) or Pharmaceutical Chemistry (Medicinal Chemistry and Pharmaceutical Analysis).

The M.S. degree is offered under a modification of Plan A which permits a student to take approximately one-half of his course in work areas outside the major area. Plan B may be employed only in exceptional cases.

The language requirement for both the M.S. and Ph.D. degrees is a reading knowledge of one foreign language chosen from French, German, or Russian.

Subject to some substitution at the recommendation of the candidate's committee, courses considered basic to the Ph.D. program are CHE 440, 442, 522, 532, 548, 633, 635, MA 481, STA 670, PHA 521. Superimposed upon this base it is expected that the student will take graduate level courses within his major area of interest from the courses listed in Pharmacy and Pharmaceutical Chemistry.

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.

- 540 *Industrial Pharmaceutical Technology.* (4)
- 545 *Sterile Parenterals and Devices.* (2-3)
- 612 *Quantitative Pharmacodynamics.* (2)
- Pharmacokinetics.*

- 622 *Advanced Biopharmaceutics.* (2)
- 630 *Pharmaceutical Rate Processes.* (3)
- 631 *Equilibrium Phenomena in Pharmaceutical Systems.* (3)
- 632 *Pharmaceutical Disperse Systems.* (3)
- 760 *Topics in Pharmaceutics.* (2)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 776 *Seminar in Pharmaceutics I.* (1)
- 778 *Seminar in Pharmaceutics II.* (1)
- 780 *Special Problems in Pharmaceutics.* (1-6)
- 790 *Research in Pharmaceutics.* (1-12)

PHARMACEUTICAL CHEMISTRY

- 400 *Biochemistry.* (4)
- 402 *Pharmaceutical Analysis and Control.* (4)
- 404 *Chemistry of Medicinal Products.* (3)
- 406 *Chemistry of Medicinal Products.* (3)
- 510 *Modern Methods in Pharmaceutical Analysis.* (5)
- 620 *Natural Products Chemistry.* (3)
- 640 *Advanced Pharmaceutical Chemistry I.* (3)
- 642 *Advanced Pharmaceutical Chemistry II.* (3)
- 760 *Topics in Pharmaceutical Chemistry.* (2-4)
- (Topic and credit to be listed when offered)
- 768 *Residence Credit for the Master's Degree.* (1-6)
- 769 *Residence Credit for the Doctor's Degree.* (1-12)
- 776 *Seminar in Pharmaceutical Chemistry I.* (1)
- 778 *Seminar in Pharmaceutical Chemistry II.* (1)
- 780 *Special Problems in Pharmaceutical Chemistry.* (1-6)
- 790 *Research in Pharmaceutical Chemistry.* (1-12)

MATERIA MEDICA

- 450 *Pharmacology and Toxicology.* (5)
- 462 *Pharmacology and Toxicology.* (5)
- 470 *Drug Literature Evaluation.* (3)
- 474 *Independent Problems in Toxicology.* (1-3)
- 475 *Independent Problems in Pharmacognosy.* (1-3)
- 476 *Independent Problems in Pharmacology.* (1-3)
- 486 *Poison Information and Control.* (3)
- 620 *Biotoxicology.* (3 or 5)
- 630 *Biotoxicology.* (3 or 5)
- 640 *Environmental Toxicology and Occupational Hygiene.* (3)

Social Professions

Graduate Faculty: Professors Zafir Hasan, Ernest Witte (Dean and Director of Graduate Studies). Associate Professors Constance Wilson, Roy Yarbrough.

Associate Members: Professor Ben Granger. Associate Professor George Plutchok.

The term social professions is used to describe those helping services concerned with the social and developmental needs of people. Such services are divided into the following types: namely, restorative in which individuals who have serious social and related problems are helped to overcome these difficulties; and preventive in which an effort is made to change those conditions in the environment and the institutions which serve people in ways which will help prevent so many individuals from becoming disabled or handicapped by circumstances beyond their control. These two aspects of social services plus a third, namely, social planning, policy analysis and development, are so closely related that to be effective, personnel prepared for practice in the social professions must participate to some degree in all of these practice areas, although they may have more responsibility in one than another by reason of the assignments they hold in organizations in which they are employed.

The areas of service for which the College prepares qualified personnel include:

1. Those responsible for helping meet the needs of individuals and groups with serious social and related problems. Such individuals and groups are often classified for purposes of identification as: families, children, and the aged; the physically ill and disabled; the mentally ill and those with developmental disabilities; and juvenile delinquents and adult offenders.
2. Those responsible for providing leadership for the planning, organization, and administration of social services for the following key functions: social planning, policy analysis and development; administration; supervision; consultation; teaching; and research.

The graduate curriculum provides a carefully integrated program of classwork and practice on field teaching-learning centers organized as an educational practicum each under the direction

of a member of the College faculty. Currently there are six teaching-learning centers located in Lexington-Frankfort and one in Appalachia. Each teaching-learning center includes some five to 20 agencies whose services are in related program areas so that the student has an opportunity to see the broad range of services and to understand a systems approach to the delivery of social services. Currently these teaching-learning centers include one in each of the following areas: family and children; mental health/mental retardation; general health; state governmental service and action; community and urban affairs; and corrections. The Appalachian teaching/learning center provides experience in the health/mental health and the public welfare-planning areas.

For further and more detailed information see the College of Social Professions Bulletin.

The College of Social Professions offers a graduate curriculum of four semesters duration, leading to the Master of Social Work degree in accordance with Plan B. The MSW degree program is designed to prepare students for careers in the social professions. The College also offers a series of courses in its undergraduate social work program which may be taken for graduate credit.

Requirements for the degree of Master of Social Work:

1. Earn 54 hours of credit with a grade average of B or above. Forty of these credits must be in the required social work courses. Four credits will be chosen from additional courses offered within the graduate social work curriculum of the College of Social Professions. The remaining 10 credits may be elected from relevant courses offered throughout the University or by the College of Social Professions. Graduates with a B.A. in Social Work may petition to substitute other courses for specific courses required for the MSW degree if in their opinion there is likely to be unnecessary duplication in content. Such students will be required to establish their knowledge competence in the subject area for which they are petitioning to take substitute courses. In addition, Bachelor degree graduates from other majors may, by special ex-

amination, 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 MSW degree.

2. Earn all 54 hours within a seven-year period.
3. Earn not less than 28 of the 54 required credit hours at the University of Kentucky. All social work transfer credits accepted for the degree must have been earned in a school accredited by the Council on Social Work Education.
4. Complete at least 18 semester hours of the minimum graduate degree requirements while in residence on the Lexington campus of the University of Kentucky.
5. 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 Full Graduate Standing by the Graduate School and have completed the College of Social Professions advancement-to-candidacy review. The advancement-to-candidacy review consists of an examination which offers students an opportunity to demonstrate their understanding of the core-curriculum areas of social policy, practice, human behavior, and research, and their ability to integrate the curriculum. The examination format and content will be specified by the dean in consultation with the Committee on Student Performance and Candidacy.
6. Successfully complete the final comprehensive examination. This examination consists of an intensive review with students of the total two year educational program to determine their potential capacity for professional practice. The examination format and content will be specified by the dean in consultation with the Committee on Student Performance and Candidacy and in accordance with the regulations of the Graduate School.

The MSW degree program has been developed in cooperation with the Council on Social Work Education. Approval of the application of the College for admission to candidacy was received from the Accreditation Commission of the Council on Social Work Education in January 1970, and the MSW program was accredited in June 1972 following its on-campus review by representatives of the Commission.

Full-time students are admitted to the MSW degree program only in the fall semester. Applications to the College of Social Professions should be filed not later than April 15, prior to entrance in the fall. An application for admission to the Graduate School must be filed before a student can be considered for the MSW program.

444	<i>Field Instruction.</i>	(6)
445	<i>Field Instruction.</i>	(6)
500	<i>Public Welfare Administration.</i>	(3)
505	<i>Child Welfare Services.</i>	(2-3)
510	<i>Mental Health Knowledge for the Social Professions.</i>	(2-3)
516	<i>Social Work Research and Statistics.</i>	(3)
520	<i>Interventive Methods in Social Work.</i>	(3)
521	<i>Interventive Methods in Social Work.</i>	(3)
541	<i>Administration and Supervision in the Social Professions.</i>	(3)
551	<i>Public Assistance Programs.</i>	(3)
561	<i>The Role of Social Work in Crime Prevention.</i>	(3)
571	<i>Social Work and the Law.</i>	(3)
580	<i>Topical Seminars in Social Work.</i>	(2-4)
601	<i>Social Work Practice.</i>	(4)
602	<i>Social Work Practice with Adults.</i>	(2)
603	<i>Social Work Practice with Children and Youth.</i>	(2)
604	<i>Social Work Practice with the Aging.</i>	(2)
605	<i>Social Work Practice in Health Services.</i>	(2)
606	<i>Social Work Practice in Correctional Services.</i>	(2)
607	<i>Social Work Practice with Families.</i>	(2)
608	<i>Social Work Practice for Social Reform.</i>	(2)
620	<i>Human Growth and the Social Environment.</i>	(4)
621	<i>Perspectives on Deviance for Social Workers.</i>	(2)
622	<i>Group Theory for Social Workers.</i>	(2)
623	<i>Ethnicity in Social Work Practice and Education.</i>	(2)
625	<i>Comparative Social Welfare Policies and Programs.</i>	(2-3)
630	<i>Social Welfare Policies and Services.</i>	(4)
632	<i>Social Work and the History of Social Reform.</i>	(2)
633	<i>Social Welfare and the Political Processes.</i>	(2)
640	<i>Educational Practicum I.</i>	(10)
650	<i>Problem-Solving Seminar I.</i>	(2)
680	<i>Special Problems in Social Work Practice.</i>	(2-4)
690	<i>Research in Social Work.</i>	(2)
701	<i>Advanced Practice Theory.</i>	(2)
706	<i>Social Work Practice in Correctional Services.</i>	(2)
712	<i>Principles and Methods of Field Instruction in Social Work I.</i>	(2)
713	<i>Principles and Methods of Field Instruction in Social Work II.</i>	(2)

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- 720 *Organizational and Administrative Theory for Social Workers.* (2-4)
730 *Public Social Policy and the Delivery of Social Services.* (2)
731 *Social Work and Community Planning.* (2)
732 *Social Planning and Development.* (2)

- 740 *Educational Practicum II.* (8)
745 *Advanced Specialized Educational Practicum.* (2-4)
750 *Problem-Solving Seminar II.* (2)
770 *Seminar on Social Issues and Social Work Practice.* (2)
790 *Methods in Social Work Research.* (2-6)

Administrative Organization

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Anthony Eardley, Dean of the College of Architecture
Ernest F. Witte, Dean of the College of Social Professions
W. C. Royster, Dean of Graduate School

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