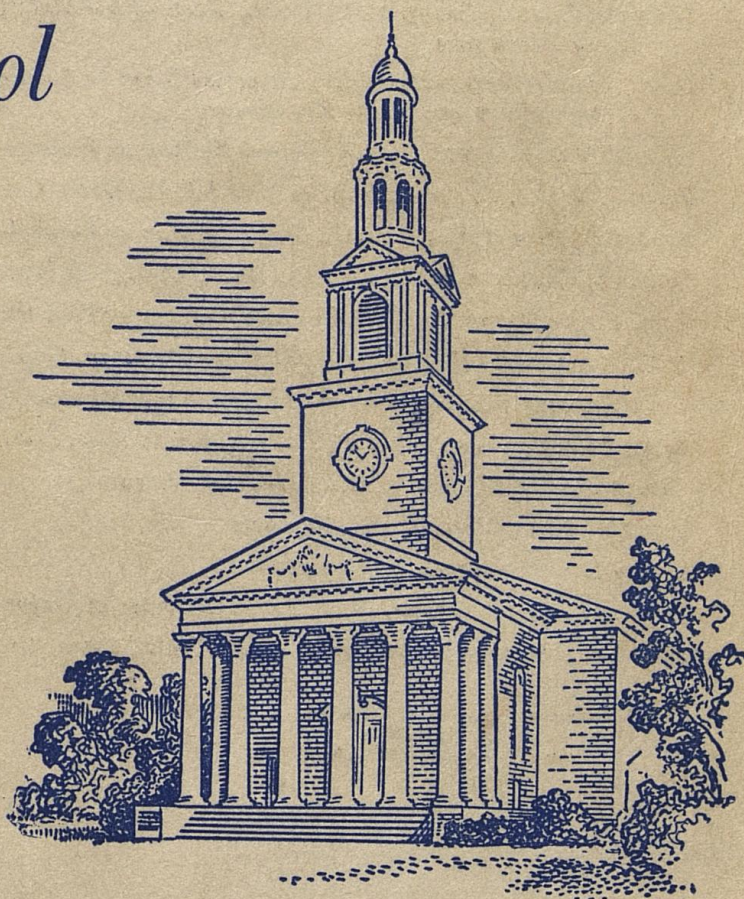


Bulletin of the

UNIVERSITY OF KENTUCKY

Graduate School



VOLUME 43

JULY, 1951

NUMBER 7

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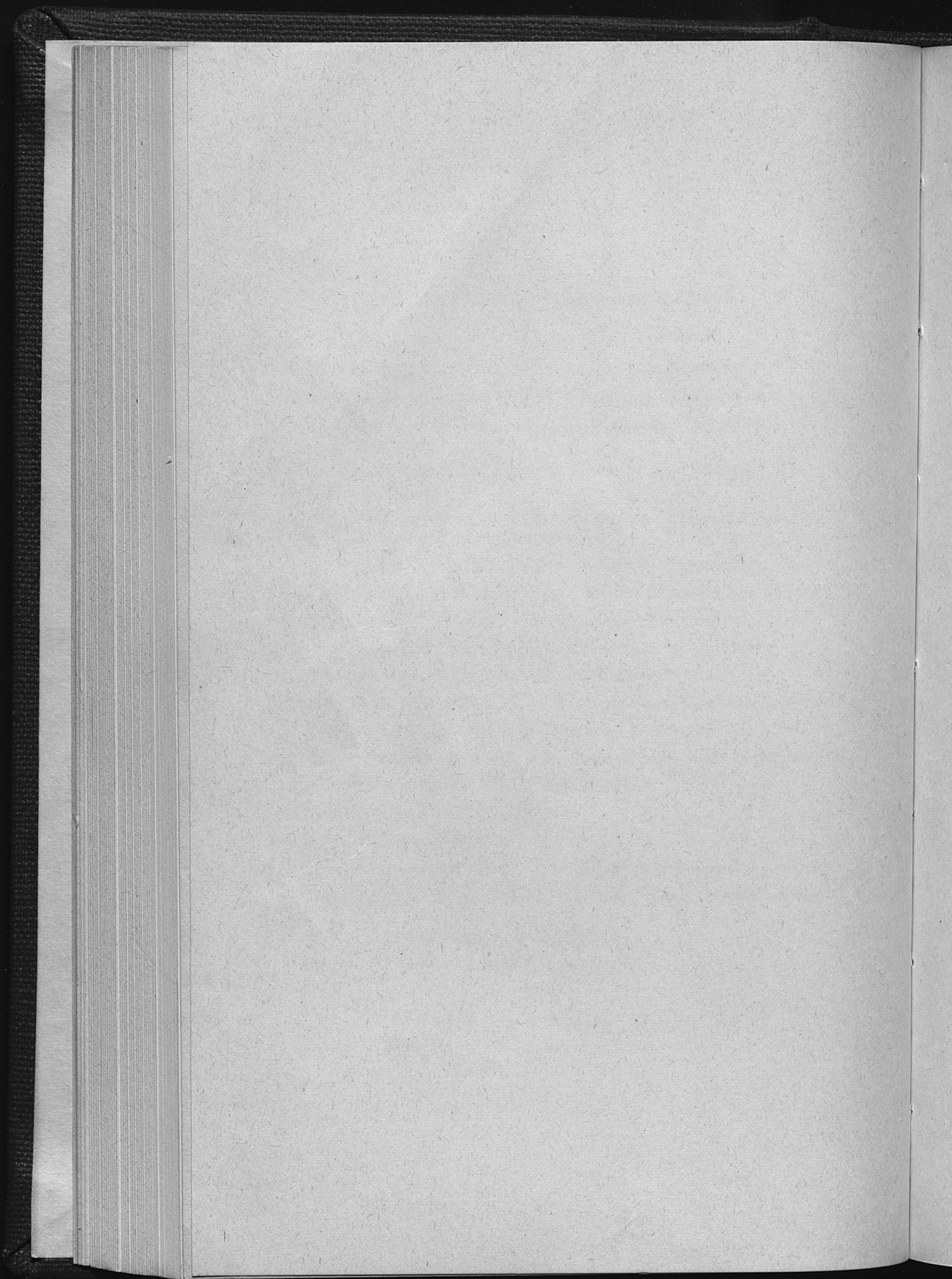
HERMAN EVERETTE SPIVEY, A.B., M.A., PH.D., *Dean, Graduate School*

* Special assignment effective July 1, 1951.

** Effective July 1, 1951.

*** Resigned, October 15, 1950.

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BULLETIN
University of Kentucky



Graduate School

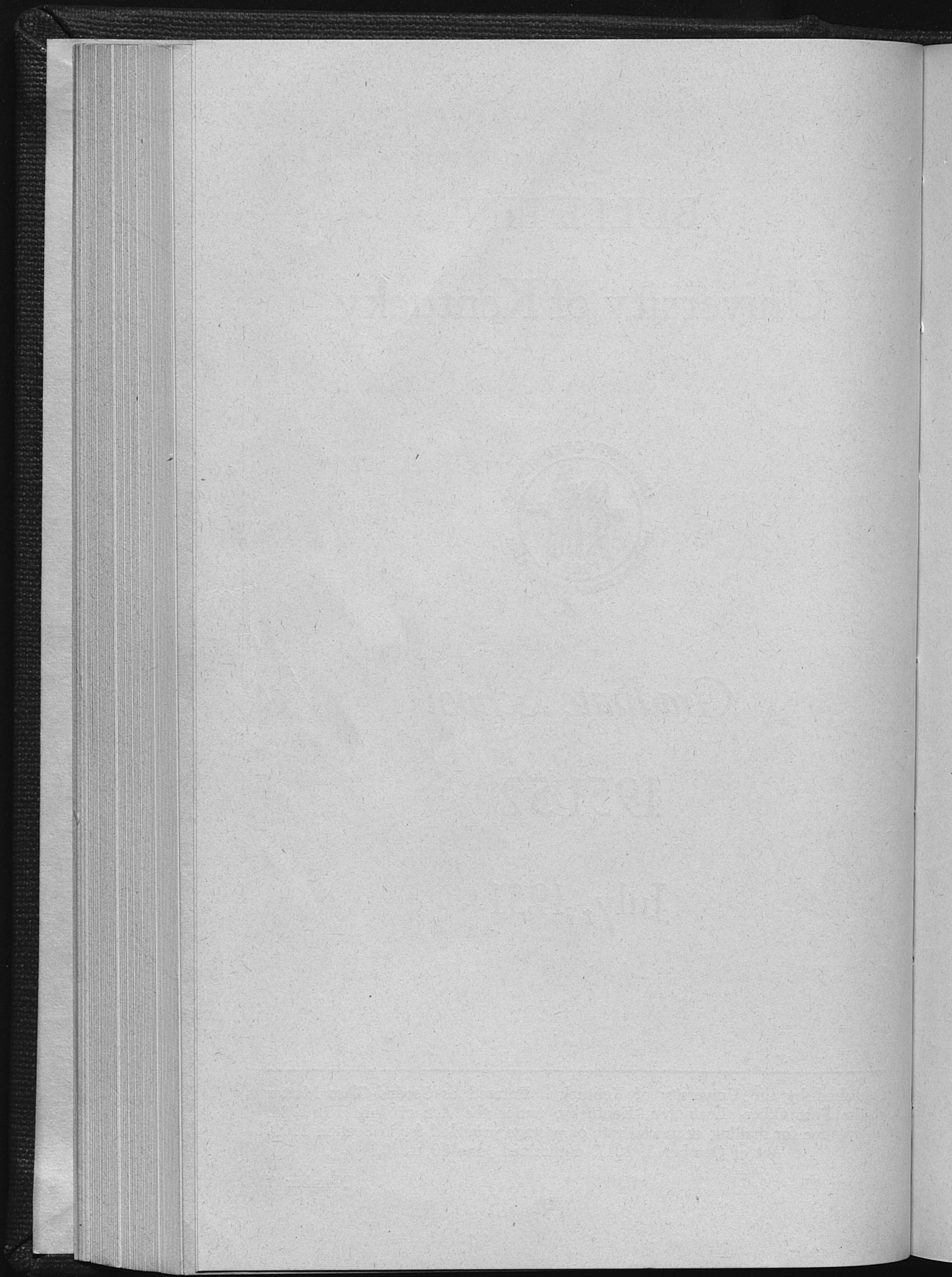
1951-52

July, 1951

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Volume 43

Number 7



UNIVERSITY CALENDAR 1951-52

FIRST SEMESTER

1951

September 13-15	Thursday, 8:00 a.m. to Saturday Noon — Registration and classification of all students, according to an alphabetical schedule
September 17	Monday — Class work begins
September 22	Saturday — Last date one may enter an organized class for the first semester
October 12, 13	Friday and Saturday — Period for filing applications for degrees
October 22	Monday — Last date one may drop a course without a grade
November 22-26	Thursday, 8:00 a.m. to Monday, 8:00 a.m. — Thanksgiving holidays
December 19	Wednesday, 6:00 p.m. — Christmas holidays begin
January 3	Thursday, 8:00 a.m. — Christmas holidays end
January 21-25	Monday through Friday — Final examinations
January 25	Friday, 6:00 p.m. — End of First Semester

SECOND SEMESTER

February 4, 5	Monday, 8:00 a.m. to Tuesday, 4:20 p.m. — Registration and classification of all students, according to an alphabetical schedule
February 6	Wednesday — Class work begins
February 12	Tuesday — Last date one may enter an organized class for the second semester
February 29-March 1	Friday and Saturday — Period for filing applications for degrees
March 10	Monday — Last date one may drop a course without a grade
March 25	Tuesday — Latest date for having Haggin Scholarship applications for 1952-53 in Graduate Office
April 11-15	Friday, 8:00 a.m. to Tuesday, 8:00 a.m. — Easter holidays
May 1	Thursday — Thesis deadline
May 20	Tuesday — Latest date for reports to Graduate Office on results of final oral exams
May 25	Sunday — Baccalaureate Services
May 27-31	Tuesday through Saturday — Final examinations
May 30	Friday — Eighty-fifth Annual Commencement
May 31	Saturday, 6:00 p.m. — End of Second Semester
June 3-7	Tuesday through Saturday — 4-H Club Week

SUMMER SESSION 1952

June 17	Tuesday, 8:00 a.m. to 4:30 p.m. — Registration and classification of all students, according to an alphabetical schedule
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June 18	Wednesday — Class work begins
June 21	Saturday — Last date one may enter an organized class for the summer session
June 28	Saturday — Last date one may drop a course without a grade
June 27, 28	Friday and Saturday — Period for filing applications for degrees
July 4, 5	Friday and Saturday — Independence Day holiday
July 11	Friday — Thesis deadline
July 30	Wednesday — Latest date for reports to Graduate Office on results of final exams
August 8	Friday — Summer Session Commencement
August 9	Saturday Noon — End of Summer Session

FIRST SEMESTER 1952-1953

September 8	Monday — Opening of First Semester
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GRADUATE FACULTY

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Dean of the Graduate School

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Secretary, Graduate Faculty

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ELLIS FORD HARTFORD, M.A., Ed.D.	Education
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*HERBERT H. HUMPHREYS, Ph.D.	Psychology
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HERBERT PARKS RILEY, M.A., Ph.D.	Botany

* Resigned, September 1, 1950.

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HAROLD E. WETZEL, B.Sc. in S.A., M.A.	Social Work
MARTIN MARSHALL WHITE, M.A., PH.D.	Psychology

THE GRADUATE SCHOOL

HERMAN EVERETTE SPIVEY, A.B., M.A., PH.D., Dean

INTRODUCTORY STATEMENT

Graduate work is offered in all colleges in the University. Approximately a thousand courses acceptable for graduate credit are listed in the catalogue, under the various departments.

The following advanced degrees are conferred by the University:

- Master of Arts
- Master of Science
- Master of Science in Public Health
- Master of Science in Agriculture
- Master of Science in Home Economics
- Master of Science in Civil Engineering
- Master of Science in Electrical Engineering
- Master of Science in Mechanical Engineering
- Master of Science in Metallurgical Engineering
- Master of Science in Mining Engineering
- Civil Engineer (C.E.)
- Electrical Engineer (E.E.)
- Mechanical Engineer (M.E.)
- Metallurgical Engineer (Met.E.)
- Mining Engineer (E.M.)
- Master of Arts in Education
- Master of Science in Education
- Master of Business Administration
- Master of Music
- Doctor of Education (Ed.D.)
- Doctor of Philosophy

The degree of Doctor of Philosophy is offered with major work in the following fields: Agricultural Economics, Bacteriology, Chemistry, Education, Economics, English, History, Mathematics, Physics, Psychology, Political Science, Romance Languages, and in the combined fields of Sociology and Rural Sociology. Minor work may be carried in any department offering graduate courses.

ADMISSION

A student who is a graduate of a fully accredited institution of higher learning may apply for admission to the Graduate School by submitting to the Registrar of the University an official transcript of undergraduate courses and a written application. Blanks for the latter may be obtained from the Registrar or from the office of the Graduate School.

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 desires. It may be necessary for him to satisfy certain prerequisites which he omitted in his undergraduate curriculum. These will be determined by the department

in which the major work is to be done. In brief it may be stated that a graduate student may begin a full program in the fields in which he has the equivalent of a balanced undergraduate major; in some cases the equivalent of an undergraduate minor is adequate.

If the record submitted to the Registrar entitles the applicant to admission, he should confer with the Dean of the Graduate School about general requirements and with his major professor concerning detailed requirements that he may have to satisfy.

Members of the faculty of the University of Kentucky having a rank higher than that of instructor may not be considered as candidates for advanced degrees from this institution.

GENERAL REQUIREMENTS FOR ALL ADVANCED DEGREES

Courses

All courses listed in the regular University catalogue which have numbers above 100 may be counted as credit toward a graduate degree; however, courses numbered from 100 to 199 may be counted only with the approval of the student's graduate committee. A course completed with a grade of D will not be given graduate credit. An overall average of B on all graduate work taken at the University as a graduate student must be attained before an advanced degree may be awarded.

Residence

A load for full-time residence comprises a minimum of 9 semester hours of graduate course work. In the summer session the corresponding load is 6 semester hours. Part-time residence during any semester is computed on the basis of one and one-half weeks of residence for each semester hour earned. Part-time students in the summer session receive one and one-half weeks per semester hour except for short courses of less than eight weeks, in which case residence shall not exceed the actual number of weeks involved.

Fees

Registration fees per semester are the same as for undergraduate students in the college in which the major work is done, that is, \$60.00 for residents of Kentucky; \$90.00 for non-residents who registered before September 1, 1947; \$120.00 for those who registered after September 1, 1947. Part-time graduate students who are legal residents of the state pay \$6.75 per semester hour; non-residents who registered before September 1, 1947, pay \$10.25 per semester hour; non-residents who registered after September 1, 1947, pay \$13.50 per semester hour. Students carrying full loads in the summer session pay one-half the regular semester fee. Those taking less than full loads pay the regular semester credit-hour fee.

GENERAL REQUIREMENTS FOR ALL MASTERS' DEGREES**Transfer of Credits**

No transferred credits are accepted toward any master's degree in course; however, a student is not asked to repeat a course which he has satisfactorily completed at another institution.

Extension

Under certain conditions, up to one-third of the credits and residence required for any master's degree in course may be satisfied by extension courses given in person by University of Kentucky instructors. No graduate credit is given for courses taken by correspondence.

M.A. or M.S. Degree

Whether a candidate selects a Master of Arts or a Master of Science degree is left to the option of the candidate and his major department. In general it may be said that a candidate with major work in the natural sciences should take the M.S. degree; others, the M.A.

Examinations

A final oral examination is given all candidates for masters' degrees in course, not later than fifteen days before the close of the semester. The Dean of the Graduate School appoints examining committees of at least three members each for the purpose, selecting the members from the major and minor professors under whom the work was done. The Dean is ex officio a member of all such examining committees. The candidate is asked to defend his thesis, if one has been written, and is examined on any subject matter related to his field.

Fees

Before any master's degree is conferred, a commencement fee of \$20.00 must be paid at the Comptroller's Office of the University.

**REQUIREMENTS FOR THE DEGREES OF MASTER OF ARTS
AND MASTER OF SCIENCE****Credits**

The candidate shall complete a minimum of 24 semester hours of graduate course work with a standing of 2.0 or better. Additional courses may be assigned by the candidate's adviser. The required honor point average of 2.0 is calculated on the basis of all graduate work taken as a graduate student.

Courses

The candidate shall have a major field which shall comprise at least two-thirds of the course work; the other one-third may be taken in that field or in fields which have graduate relationship with it. In education and agriculture only one-half of the work must be in the major field.

Residence

The minimum residence required is one academic year of 36 weeks. This residence may be fulfilled by any combination of semesters or summer sessions which totals the required number of weeks.

This does not mean that the work prescribed for each individual can always be completed in the minimum length of time. Inadequate preparation or assistance in departments very frequently makes a longer period necessary.

Thesis

A thesis is required of every candidate. Two typewritten copies of the thesis, approved by the professor in charge and in a form acceptable to the Graduate School, must be presented not later than three weeks before the last day upon which grades may be reported to the Registrar's Office. The final oral examination may not be taken before the thesis has been accepted by the Graduate School Office. *This thesis deadline date is noted in the University Calendar at the front of this bulletin.*

For information on form and style, the student should obtain from the Campus Bookstore and follow Kate Turabian's *A Manual for Writers of Dissertations*, except as this manual is modified by a supplementary sheet available in the Graduate Office.

Language Requirements

A reading knowledge of at least one modern foreign language is required. This language should be pertinent to the program of the student and approved by his adviser. The language requirement must be satisfied by an examination given by the foreign language department of the University offering instruction in the language concerned. The passing of this examination may satisfy one of the two language requirements for the doctorate if approved by the student's special committee.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN EDUCATION

See Education, pages 112-113.

**REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE
IN AGRICULTURE AND MASTER OF SCIENCE IN
HOME ECONOMICS**

Students holding a bachelor's degree from a standard agricultural college may obtain the degree of Master of Science in Agriculture or Master of Science in Home Economics by satisfying the following requirements:

1. The completion of 24 semester hours of graduate work with an average standing of 2.0 or better, 36 weeks in residence, and a thesis, or the completion of 36 semester hours of graduate work with a standing of 2.0 or better, 45 weeks in residence, and no thesis requirement.
2. Under either plan no grade below C may be counted.
3. One-half of the work must be in one department, the remainder in any other department or departments approved by the major professor.
4. There is no language requirement for either of these professional degrees.

In either case a final oral examination is given the candidate not later than 15 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.

Graduate students in the College of Agriculture fall into four groups:

Group I.—Those who have presented the degree Bachelor of Science in Agriculture or Home Economics and plan to prepare a thesis under the direction of a major professor in their graduate work.

Group II.—Those who do not have the degree of Bachelor of Science in Agriculture or Home Economics and plan to prepare a thesis. Such students may not have had certain essential undergraduate work. In such cases the major professor will recommend to the graduate committee a plan to strengthen the student in such weaknesses. When approved by the committee this plan will become the basis of the student's graduate program.

Group III.—Those students who have the degree Bachelor of Science in Agriculture or Home Economics and request the option to omit the thesis and present 36 semester hours in graduate courses and 45 weeks of residence. Such students will be assigned a graduate adviser who will aid them in preparing a program for graduate work. The program will be submitted to the Graduate Committee for approval early in the student's residence period.

Group IV.—Those students who do not have the degree Bachelor of Science in Agriculture or Home Economics and who request the option to omit the thesis and present 36 semester hours in graduate courses and 45 weeks of residence. Students in this group will be assigned a graduate adviser who will aid them in preparing a statement of the candidate's program for the master's degree. Approval of this program by the Committee must be obtained early in the student's residence period. Candidates in Group IV should take one or more courses, preferably advanced courses, in each department of the College of Agriculture in which there is a required course for the Bachelor of Science in Agriculture or Home Economics.

REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN PUBLIC HEALTH

Students holding a bachelor's degree from a fully accredited institution or the M.D. degree from a recognized Medical School may obtain the degree of Master of Science in Public Health by satisfying the following requirements:

1. Twenty-four semester hours in graduate courses with an average standing of 2.0 or better.
2. No grade below C may be counted.
3. Thirty-six weeks in residence.
4. An acceptable thesis.
5. There is no language requirement for this degree.

REQUIREMENTS FOR ADVANCED DEGREES IN ENGINEERING

Two classes of advanced degrees are offered in the College of Engineering, the masters' degrees and the professional degrees.

THE MASTERS' DEGREES IN ENGINEERING. The masters' degrees in engineering may be obtained by satisfying the following requirements:

1. Twenty-four semester hours in graduate courses with an average standing of 2.0 or better.
2. No grade below C may be counted.
3. Thirty-six weeks in residence.
4. An acceptable thesis.
5. Two-thirds of the work must be in the major subject.
6. There is no language requirement for these degrees.

The candidate must hold the corresponding Bachelor of Science degree in engineering or the equivalent from this institution or from another engineering school of recognized standing. The degrees offered are Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering, Master of Science in Metallurgical Engineering, Master of Science in Mining Engineering.

THE PROFESSIONAL DEGREES IN ENGINEERING. The professional degrees of Civil Engineer (C.E.), Electrical Engineer (E.E.), Mechanical Engineer (M.E.), Metallurgical Engineer (Met.E.), or Mining Engineer (E.M.) will be granted only to graduates of the University of Kentucky, College of Engineering, who present satisfactory evidence of professional work of creditable quality in the engineering fields of their choice, extending over a period of five years, and who submit satisfactory theses as further evidence of their professional attainments.

A candidate holding a master's degree in engineering shall be considered to have fulfilled two years of the five-year requirement for the corresponding professional degree.

An application for a professional degree must be made to the Dean of the Graduate School and have the approval of the Graduate Committee of the College of Engineering not less than one academic year before the degree may be granted.

The Graduate Committee will pass on the qualifications of each applicant. It may, at its discretion, require an oral examination. The applicant is expected to submit a record of his engineering experience, which should include a complete list of his professional engagements, showing in each case the length of time employed and the position held. He should give for references the names of at least three persons who are familiar with his engineering work. Preferably these persons should be connected with the organizations by whom he has been employed.

A thesis is required of each candidate. It may be in the field of research, design, invention or engineering processes and methods. It must contain some original thought and be the product of the individual submitting it. Quotations and references with proper credit may be used. In general, the thesis should be of such a nature that it will be of value to the engineering profession.

A candidate holding a bachelor's degree in one field of engineering may apply for a professional degree in another field of engineering if he has attained unusual prominence and success in that field.

Fees

The fees for a professional degree in engineering are \$15.00 for registration and \$20.00 for graduation.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is conferred upon a candidate who, after completing not less than three years of graduate work devoted to the study of a special field of knowledge, presents a satisfactory dissertation and passes a comprehensive examination, thus qualifying for recognition as a scholar of high attainments in his chosen province.

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 shown by a thorough acquaintance with present knowledge in a particular field of learning and a marked capacity for research.

Admission

Admission to the Graduate School and acceptance of advanced credits from other institutions must first be approved by the Registrar, who will determine at the time of admission the amount of residence to which the applicant is entitled toward the degree of Doctor of Philosophy. No work is credited which has not been done in a college or university of recognized standing.

In order to be accepted as an applicant for the degree of Doctor of Philosophy, a student must present to the Registrar evidence that he has completed an undergraduate curriculum and has received his baccalaureate degree from a fully accredited institution.

Classification

A student wishing to become an applicant for the doctor's degree must first regularly register in the Graduate School of the University of Kentucky and must then classify with the Dean of the Graduate School. The student is expected to select his major professor as early as is practicable. He should then apply to the Dean of the Graduate School to have a special committee of five members appointed. The special committee, the chairman of which shall be the director of his dissertation, will consist of members of the departments in which the applicant elects to do his major and minor work, and this committee will supervise his work throughout his period of study.

Not every applicant for the doctor's degree is a candidate. A student is not a candidate for the degree until he has satisfied the language requirements, has passed the qualifying examinations at the University of Kentucky, and has been formally admitted by the Graduate School.

Courses of Study

Every applicant for the degree must select one major and at least one and not more than two minor subjects. One of the minors must be outside the department of the major.

The major subject should be one in which he intends to concentrate his efforts; the minor subjects should be closely allied to the major field or be subjects which will be of value in the major work and should be approved by the major department.

The applicant's principal work must be in the major subject. Although no absolute regulations are laid down in respect to the time to be devoted to the major and minor subjects, it may be stated in general that the major subject should represent two-thirds of the student's entire time.

Any regular graduate course may be assigned as part of the applicant's work by his special committee. Only courses numbered above 100 in the University Catalogue are considered as of graduate status. The number and extent of such courses is determined by the special committee.

A full-time course load for any semester ranges from 9 to 15 semester hours of credit; in the summer, from 6 to 8 semester hours.

Residence

A minimum of three collegiate years of resident graduate work, of which at least the last year must be spent at the University of Kentucky, is required for the doctorate. The full time of each of these years must be spent in study. Part-time students and those holding assistantships or engaging in other outside activities will of course be required to take proportionately longer time.

While it is expected that a well-prepared student of good ability may secure the degree upon the completion of three years of study, it should be understood that this time requirement is a minimum and is wholly secondary to the matter of scholarship. Time spent in study, however long; the accumulation of facts, however great in amount; and the completion of advanced courses, however numerous cannot be substituted for independent thinking and original research.

Language Requirements

The applicant must give evidence of having a good reading knowledge of, and of being able to translate at sight, at least two modern foreign languages. This proficiency is determined by examinations conducted by the respective language departments at the University of Kentucky. While ordinarily French and German are acceptable, the final choice should be made under the guidance of the student's special committee, which will recommend what languages are to count. The language requirements must be satisfied before the applicant can be admitted to the qualifying examination.

Qualifying Examinations

An applicant for the degree of Doctor of Philosophy is required to pass a qualifying examination. This examination probably should be taken during the second semester of the second year of residence but in no case before the special committee has recommended that the applicant is ready for the examination. The examination shall be both oral and written and shall cover both

major and minor subjects. It shall be administered to the applicant by his special committee and shall be evaluated by that committee. *No applicant may proceed to his final examination until one year of work has been completed in residence after he has passed the qualifying examination.* If the applicant fails to pass the qualifying examination, no re-examination shall be allowed except upon the recommendation of the special committee and the approval of the Graduate Dean.

Dissertation

Each candidate must present a dissertation covering his thesis work. This dissertation must give evidence of the candidate's ability to carry on independent investigation and must be satisfactory in style and composition. It must represent a definite contribution to the knowledge of his subject, must be the result of independent work, must include original research, and must in some way add to or otherwise modify what was previously known on the subject. Two bound typewritten copies of the thesis and two copies of an abstract, the original bound the first carbon unbound, of not less than 1,200 nor more than 3,000 words must be formally presented to the Dean of the Graduate School at least three weeks before the final date on which the Registrar's Office will receive grades of candidates for degrees at the next commencement. *This deadline date is noted in the University Calendar at the front of this bulletin.*

For a recommendation concerning a thesis manual, see the note on *Thesis* requirements, p. 10 above.

Printing of Dissertation

One hundred printed copies of the dissertation must be presented to the University within one year after the degree is conferred. Not later than one week before the conferring of the degree the candidate must deposit with the Comptroller of the University the sum of \$50.00, this amount to be returned if the printed copies are received within the time specified. The University does not obligate itself to publish the dissertation, but if in the judgment of the Graduate Committee the dissertation or an abstract of it should be published, the University reserves the privilege of so doing.

— Or —

The candidate may have the dissertation printed at his own expense, in which case he must present one hundred copies to the University before the degree is granted. If the candidate has the dissertation printed at his own expense, he will be expected to use good substantial paper and slightly typography. A page four by six inches with outside margin of at least one inch is recommended. The dissertation must have a cover and title page, and the latter, in addition to the title and the name of the author, must bear the following inscription:

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the University of Kentucky.

If the dissertation is published in a technical journal or other recognized educational publication, the reprints will be accepted if presented with special printed covers and proper title page.

Final Examination

After the acceptance of the dissertation by the special committee and the Dean of the Graduate School, the candidate shall be given a final oral examination by a committee of five members which shall include the head of the major

department or his delegate presiding, one additional professor selected by the major department, one professor selected by each of the minor departments and additional members (to make the total of five) selected by the Dean of the Graduate School. The President of the University and the Dean of the Graduate School are ex officio members of all examining committees.

The final examination shall not be held until at least one year has been spent in residence after the student has been accepted as a *candidate* for the degree.

The completion of three years of residence work confers no right upon the student to be examined.

Recommendation

After the final examination has been passed, the name of the candidate will be presented for recommendation to the Board of Trustees for the degree of Doctor of Philosophy in course.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

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

1. No languages are required for the Ed.D. degree.
2. A total of 72 semester hours is required of which at least one-third and not more than one-half must be in departments outside the College of Education.

FELLOWSHIPS AND SCHOLARSHIPS

The University of Kentucky offers the following graduate fellowships and scholarships for the encouragement of research and advanced study:

The Margaret Voorhies Haggin Trust Fellowships and Scholarships in memory of her father, George Voorhies.

Four University fellowships with a stipend of \$500 each.

Fifteen University scholarships with a stipend of \$400 each.

The primary object of these appointments is to stimulate research and not to give pecuniary aid. Scholars and fellows are expected to devote their entire time to graduate work, and no teaching or other departmental work may be required of them. Nor are they permitted to perform such duties for extra pay. The award is paid in ten equal monthly installments and does not include a remission of University fees. The appointments are made for one year only, but application may be made for their renewal.

These fellowships and scholarships are open to students who hold bachelors' degrees from colleges or universities in good standing. No student should apply for one of these awards who does not cherish a real and earnest desire to do research work.

Forms for making application may be secured from the Dean of the Graduate School and must be submitted not later than March 25.

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 arranged for his work with a view to obtaining a degree, subsequently desire to become an applicant for a degree, the number of semester hours he is to receive for work already done will be determined at the time he applies for admission as applicant for the degree.

No work is given graduate credit unless the student was enrolled in the Graduate School at the time during which the work was taken.

**RESEARCH PROGRAM AT OAK RIDGE
INSTITUTE OF NUCLEAR STUDIES**

The University is one of the Sponsoring Universities of the Oak Ridge Institute of Nuclear Studies located at Oak Ridge, Tennessee. Through this cooperative association with the Institute our Graduate Research Program has at its disposal all 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 residence work it is possible, by special arrangement, for them to go to Oak Ridge to do their research problems and prepare their theses. In addition, it is possible for the staff members of this university to go to Oak Ridge for varying periods, usually not less than three months, for advanced study in their particular fields. Thus, both staff and students may keep abreast of the most modern and up-to-date developments in atomic and nuclear research that is in progress at the Oak Ridge laboratories.

The students will go to Oak Ridge on Oak Ridge Graduate Fellowships which have varying stipends determined by the number of dependents they have and the level of work that they are doing. Staff members may work in Oak Ridge on stipends commensurate with their present salary and rank.

For further information inquire at the office of the Graduate School or write directly to the Chairman of the University Relations Division of the Oak Ridge Institute of Nuclear Studies, Box 117, Oak Ridge, Tennessee.

GRADUATE FIELDS OF STUDY

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

I. LANGUAGES AND LITERATURES

- Ancient Languages
- Dramatic Arts (See English)
- English, Speech, and Dramatic Arts
- German
- Journalism
- Library Science
- Radio Arts
- Romance Languages
- Speech (See English)

II. SOCIAL SCIENCES

- Anthropology
- Business Education (See Education)
- Commerce (See Economics)
- Economics
- Educational Psychology (See Education)
- Farm Economics (See Agriculture)
- History
- History of Education (See Education)
- Law (See Law)
- Markets and Rural Finance (See Agriculture)
- Philosophy
- Philosophy of Education (See Education)
- Political Science
- Psychology (See Biological Sciences)
- Rural Sociology (See Agriculture)
- Social Work
- Sociology

III. BIOLOGICAL SCIENCES

- Agronomy (See Agriculture)
- Anatomy and Physiology
- Animal Industry (See Agriculture)
- Animal Pathology (See Agriculture)
- Anthropology (See Social Sciences)
- Bacteriology
- Botany
- Entomology (See Agriculture)
- Horticulture (See Agriculture)
- Hygiene and Public Health
- Pharmacy (See Physical Sciences)
- Psychology
- Zoology

IV. PHYSICAL SCIENCES

Chemistry
Engineering (See VII below)
Geography
Geology
Mathematics and Astronomy
Pharmacy
Physics

V. AGRICULTURE

Agricultural Education (See Education)
Agricultural Economics (See Farm Economics and Markets and Rural Finance)
Agricultural Entomology
Agronomy
Animal Industry
Animal Pathology
Farm Economics
Farm Engineering
Home Economics
Home Economics Education (See Education)
Horticulture
Markets and Rural Finance
Rural Sociology

VI. EDUCATION

Administration
Foundations of Education
Instruction and Placement
 Business Education
 Curriculum and Instruction
 Elementary Education
 Music Education
 Secondary Education
Vocational Education
 Agricultural Education
 Distributive Education
 Home Economics Education
 Industrial Education
 Vocational Education
 Physical Education

VII. ENGINEERING

General Engineering
Civil Engineering
Electrical Engineering
Mechanical Engineering
Metallurgical Engineering
Mining Engineering

VIII. FINE ARTS

Art
Music

XI. LAW

GRADUATE COURSES OF STUDY

Note. Arabic numbers in parentheses indicate the number of semester hours given for each course and the Roman numerals refer to the semester in which the course is offered.

I. LANGUAGES AND LITERATURES

ANCIENT LANGUAGES AND LITERATURES

The Department of Ancient Languages requires, as a prerequisite for the master's degree, attainment in Latin and/or Greek and/or classical civilization equivalent to that required of an undergraduate major in the Department at the University of Kentucky. Students having deficiencies in such an equivalent will plan, in consultation with the Head of the Department, such a curriculum as will make up this deficiency.

The Department offers the master's degree in four fields: (1) Latin, (2) Greek, (3) classical languages and civilization, and (4) the teaching of classical languages.

LATIN

Note: Courses in beginning Latin, Cicero, Vergil, etc., will be offered on the graduate level for students in Greek (or in other departments of the University) who may have need for such courses in their graduate work. The Head of the Department should be consulted about such arrangements.

109a, b – LATIN LITERATURE. Courses in various authors, periods, or types to suit the needs of the class.

Prerequisite: 12 semester hours of Latin.

(3) I, II, S

114a, b – LATIN COMPOSITION. The writing of Latin prose of moderate difficulty.

Prerequisite: permission of instructor.

(1) I, II, S

121 – ROMAN CIVILIZATION. Topics in the political, social, economic, and cultural life of ancient Rome down to Justinian, with special reference to the relation to modern life. *No knowledge of Latin necessary.*

(2) S

150 – THE TEACHING OF LATIN. The place of Latin in general education. Developments in the teaching of Latin. The reading approach to learning Latin. Evaluation of materials.

(3) II, S

202 – THE WORKS OF VERGIL. The *Aeneid* with emphasis upon the last six books and upon the relation of the *Aeneid* to its sources and to the other works of Vergil.

Prerequisite: A. L. 4.

(3) I, S

203 – ROMAN COMEDY. Several plays of Plautus and/or Terrence. The history of comedy. The subsequent development of comedy. Introduction to Old Latin.

Prerequisite: A. L. 18.

(3) II, S

GREEK

Note: Courses in beginning Greek, Greek New Testament, Homer, Plato, Greek Mythology, etc., will be offered on the graduate level for students in Latin (or in other departments of the University) who may have need for such courses in their graduate work. The Head of the Department should be consulted about such arrangements.

120 — GREEK CIVILIZATION. Topics in the political, social, economic, and cultural life of ancient Greece, with special reference to the relation to modern life. *No knowledge of Greek necessary.* (2) II

156 — GREEK TRAGEDY. Selected plays from Aeschylus, Sophocles, and Euripides. Lectures on Greek tragedy and its effect on the western World. *Prerequisite: A. L. 53 or 54.* (3) I

157 — GREEK COMEDY. Selected plays of Aristophanes. Lectures on Greek comedy and its effect on the Western World. *Prerequisite: A. L. 156.* (3) II

204 — THE GREEK OF THE NEW TESTAMENT. Class and/or individual work to suit the needs of the students. Reading or research to suit the needs of the student. *Prerequisite: two years of college Greek.* (3) I, II, S

CLASSICAL LANGUAGES

122a — CLASSICAL EPIC IN ENGLISH TRANSLATION. *The Iliad*, *The Odyssey*, and *The Aeneid*, with some attention to classical epics of lesser importance. The meaning of these epics to the Greeks and Romans and their effect upon later literature. *No knowledge of Greek or Latin required.* (3) II

122b — CLASSICAL DRAMA IN ENGLISH TRANSLATION. Selected tragedies and comedies of both Greek and Roman dramatists. Interpretation of the plays in the light of their meaning to the Greeks and Romans. *No knowledge of Greek or Latin required.* (3) II

151a-h — INDEPENDENT WORK IN ANCIENT LANGUAGES. Courses to meet the needs of the student will be arranged in various areas of classical philology, e.g., in Greek or Latin writers, in classical civilization, in Greek or Latin linguistics, etc. *Prerequisite: permission of instructor.* (3 ea.) I, II, S

200 — RESEARCH IN THE TEACHING OF CLASSICAL LANGUAGES. Research may be done (with reference to secondary and/or higher education) in methods, in preparation of materials, in curricula, or in the place and history of classical study in education. *Prerequisite: A. L. 150.* (3) I, II, S

DRAMATIC ARTS (See English)

DEPARTMENT OF ENGLISH, SPEECH, AND DRAMATIC ARTS

The Department of English, Speech, and Dramatic Arts requires, as a prerequisite for the master's degree, attainment in English equivalent to that required of an undergraduate English major at the University of Kentucky. For the master's degree, a minimum of twenty-four semester hours of English and closely allied subjects must be offered, including the introductory seminar. A maximum of six of these twenty-four semester hours may be taken in other subjects, provided these courses have the approval of the Graduate Committee of the Department of English. All candidates for the master's degree in English will be required to attain a reading knowledge of one foreign language (ordinarily French or German) before receiving the degree.

Applicants for the doctor's degree are required to complete at least two years of residence work beyond the M.A. The applicant's program must include, among other courses, a minimum of six hours in American literature and a total of six hours in Old English and Linguistics. A knowledge of two foreign languages (ordinarily French and German) is required of all applicants. For requirements concerning the qualifying examination, the final examination, and the dissertation, see the discussion of these elsewhere in this bulletin or consult the Department.

101 — CURRENT ENGLISH USAGE AND GRAMMAR. A study of problems in usage, from points of view of descriptive and prescriptive grammar. Designed mainly for prospective and practicing teachers.

(3) I (Faust)

102 — INTRODUCTION TO THE STUDY OF THE ENGLISH LANGUAGE. Phonetics, etymology, semantics, syntax, and inflection; and the special characteristics (phonetic and lexical) of American English.

(3) I (Cutler)

104 — MILTON. A study of all of Milton's poetry and of his more important prose; readings from contemporary thinkers; studies in thought currents of the time and Milton's relation to them.

(3) II (Stroup)

105 — CHAUCER. Extensive reading in the chief works of Chaucer with assigned problems relating to Chaucer and his age.

(3) I (Cutler and Moore)

106a — ENGLISH ROMANTIC POETRY. The philosophical, critical, social, and political backgrounds of romanticism are examined. The emphasis is on Wordsworth, Coleridge, Byron, Shelley, and Keats.

(3) I (Ward)

106b — ENGLISH ROMANTIC PROSE. The novel, the essay, and literary criticism are studied. Special attention is given to Lamb, Hazlitt, DeQuincey, Scott, and Jane Austen, and to the critical prose of Wordsworth, Coleridge, and Shelley.

(3) II (Ward)

107a — VICTORIAN POETS. An extensive study of the ideas of the chief poets of the Victorian era, with special emphasis on the works of Tennyson, Browning, Arnold, Swinburne, and Rossetti.

(3) I (Shine)

107b — VICTORIAN PROSE. A study of Carlyle, Mill, Ruskin, Newman, Spencer, Arnold, Huxley, and related writers of the period in the field of prose.

(3) II (Shine)

108a — PRINCIPLES OF LITERARY CRITICISM. A course designed to show criticism as a growth and development in an historical survey and to give a corpus of critical opinion about literature. (3) I (Farquhar)

108b — PRINCIPLES OF LITERARY CRITICISM. A continuation of 108a, which is not prerequisite although desirable. (3) II (Farquhar)

109 — PRE-SHAKESPEARIAN DRAMA. A course in English origins, beginning with the *Quem Quaeritis Trope* and extending through the works of the early Elizabethans. (3) I (Stroup)

110a — SHAKESPEARE: THE COMEDIES. Shakespeare's comedies will be studied in detail. (3) I (Hatch and Black)

110b — SHAKESPEARE: THE TRAGEDIES. A continuation of English 110a, with special attention to the great tragedies. (3) II (Hatch and Black)

111a — THE EIGHTEENTH CENTURY NOVEL. A study of the novel from its beginning in English literature to the advent of Scott. (3) I (Cooke)

111b — THE VICTORIAN NOVEL IN ENGLAND. A continuation of English 111a, although the latter is not prerequisite. The course aims to acquaint the student with the development of the novel from Dickens through Gissing. (3) II (Knight)

116 — THE CONTEMPORARY DRAMA. A course designed to show the development and tendencies in Continental, British, and American dramatic literature, 1850 to date. (3) II (Farquhar)

117 — WORKSHOP IN IMAGINATIVE WRITING. Chief attention will be directed to the short story, but time also will be given to the novel. English 2b is a prerequisite except for those with successful writing experience. *Prerequisite: permission of instructor.* (2) I, II (Guthrie)

123a — AMERICAN LITERATURE BEFORE 1830. A survey intended to show the development of American life, thought, and letters up to the Transcendental movement. (3) I (Knight)

123b — AMERICAN LITERATURE AFTER 1830. Beginning with the Transcendentalists, it studies the triumphant years of American romanticism, with especial attention to Emerson, Thoreau, Hawthorne, Melville, Poe, and Whitman. (3) II (Knight)

124a — ENGLISH LITERATURE: 1500-1600. Literature of the Elizabethan period exclusive of the drama. Foreign sources of the English Renaissance. Major writers such as More, Ascham, Wyatt, Sidney, Spenser, Raleigh, and Marlowe. (3) I (Stroup)

124b — ENGLISH LITERATURE: 1600-1660. Selected non-dramatic works of such writers as Bacon, Donne, Ben Jonson, George Herbert, Izaak Walton, Herrick, Sir Thomas Browne, Vaughan, Traherne, and Milton. (3) II (Stroup)

127a — LITERATURE OF THE BIBLE. The Old Testament is studied as a post-exilic, edited, body of literature. (3) I (Farquhar)

127b — LITERATURE OF THE BIBLE. The Wisdom Literature as humanistic. (3) II (Farquhar)

130a — COMPARATIVE LITERATURE. Extensive reading of literary masterpieces from Homer to Montaigne. The readings are in English translations, but a reading knowledge of at least one foreign language is desirable. (3) I (Brady)

130b — COMPARATIVE LITERATURE. A continuation of English 130a, which is not prerequisite, although desirable. From Montaigne to Anatole France. (3) II (Brady)

131a-c — INDEPENDENT WORK. For advanced students of high standing. Each pursues a course independently, under the guidance of a staff member, writes a paper embodying the results of his study, and takes an examination. (3) I, II (Staff)

133 — THE DEVELOPMENT OF AMERICAN REALISM. Traces American realism from Yankee and pioneer humorists through the local color school, leading novelists of the eighties and nineties, their contemporaries in drama and poetry, to writers of today. (3) II (Knight)

134 — HISTORY OF THE STAGE. Designed to give the student a knowledge of dramatic history in relation to the problems of staging. Laboratory work is offered to acquaint the student with the present-day developments of historic devices and technique of staging. (3) I (Rhodes)

137 — STAGE PRODUCTIONS IN SCHOOL AND COMMUNITY. Designed for teachers and community theatre workers. The problems of staging under circumscribed conditions, minimum essentials of play production, and means of constructing or supplying these needs. (3) I, II (Briggs)

138 — ADVANCED ORAL INTERPRETATION. The cutting and dramatic reading of three-act plays.
Prerequisite: English 38 or permission of instructor. (3) II (Sterrett)

143 — EDGAR ALLAN POE. A comprehensive study of Poe's works. (3) II (Farquhar and Spivey)

145 — ELIZABETHAN DRAMA, EXCLUSIVE OF SHAKESPEARE. A survey of English drama from the early Elizabethans until the closing of the theatres. (3) I (Stroup)

146a — DISCUSSION. The essentials of discussion, with emphasis upon the thinking process as it operates in group situations. Participation in the various forms of discussion. (3) I (Blyton)

146b — ADVANCED DISCUSSION. An intensive study of discussion as democracy in action. Ample time devoted to practice discussions. (3) I (Blyton)

147 — AGE OF JOHNSON. From 1740 to 1789. Johnson and his circle: Burke, Goldsmith, Gray, Walpole, Cowper, The Pre-Romantic movement. (3) I (Cooke)

148 — A GENERAL INTRODUCTION TO FOLKLORE. An introduction — on a world-wide scope — to the types of folklore. Emphasis upon folklore as a cultural phenomenon in its own right and upon its relations to literary types. The development of the science of folklore. (3) I (Jansen)

149 — AMERICAN FOLKLORE. A study of the major materials in American folklore. The use of this material in other forms. Experience in actual collecting and in the cataloging of materials. English 148 is not a prerequisite. (3) II (Jansen)

150 — WORKSHOP IN SPEECH EDUCATION. Designed for advanced students, especially teachers and prospective teachers. Individual and group research projects pertaining to the teaching of speech. (6) II (Blyton)

152 — THE AGE OF POPE. Addison and Steele, Swift, Pope, Defoe, and other contemporary figures. (3) II (Cooke)

153 — THE DRAMA OF THE RESTORATION AND EIGHTEENTH CENTURY. A study of the dramatic types that arose between the closing of the theatres in 1642 and the death of Sheridan. (3) I (Cooke)

155a — CONTEMPORARY AMERICAN POETRY. An examination of the forces which have modified poetry in England and America since 1830; and a study of the major modern poets. (3) I (Farquhar)

155b — CONTEMPORARY BRITISH POETRY. A continuation of English 155a, which is not prerequisite, although desirable. (3) II (Farquhar)

156a — THE MODERN AMERICAN NOVEL. Novels chosen for their enduring value rather than historical importance; attention given to shifting techniques of fiction and to contrasting interpretations of the American scene. (3) I (Budd)

156b — THE MODERN BRITISH NOVEL. A study of the content and technique of the best twentieth-century British novels, with some consideration of these in relation to significant social, philosophical, and literary trends. (3) II (Staff)

157 — TEACHING OF SPEECH AND ORAL ENGLISH. An analysis of the field of speech education as related to the teacher of speech. (3) II (Blyton)

158 — ADVANCED ARGUMENTATION AND DEBATE. The function of argumentation and debate in a democracy, plus a much more detailed and critical examination of the logic of argument than is covered in English 11. (3) II (Blyton)

159 — PERSUASION. The principles and methods of persuasion. Of particular benefit to teachers, lawyers, business majors, and other persons whose work is concerned with motivating human conduct. (3) I (Blyton)

160 — THEORY AND TECHNIQUE OF ACTING. Development of skill and grace in the use of the body. Attention to establishing mood, reactions between characters, suspense through voice modulations, pause and other modes of emphasis, projecting voice and characterization. (3) I (Briggs)

161 — THEORY AND TECHNIQUE OF DIRECTING. Study of movement, interpretation of lines, creation of atmosphere, use of stage areas, use of levels, methods of achieving a climax, handling of groups, planning of mob scenes.
(3) II (Briggs)

162 — THEORY AND TECHNIQUE OF THEATRE PRODUCTION. Application of modern aesthetic principles and theories of the theatre. Attention to coordination of the playwright, designer, technical director, electrician, stage manager, actor, etc.
(3) II (Rhodes)

163 — SCENIC DESIGN. A study of form, line, and color as applied to the stage. Practical work in the building of model sets and in the application of these models to the major productions.
(3) I, II (Rhodes)

164 — SPEECH COMPOSITION. A study of speech structure and oral style. The analysis of model contemporary speeches. Preparation and discussion of speech manuscripts.
(3) I (Sterrett)

165 — THE LYRIC IN ENGLISH. A course designed to trace the development of English lyrical poetry through close study of representative specimens, past and present.
(3) II (Moore)

172 — WRITING THE ONE-ACT PLAY. This course is designed for those students interested in creative drama. The completion of at least one one-act play is required during the semester.
(3) I (Robinson)

174 — WRITING THE FULL-LENGTH PLAY. The writing of a full-length play is required during the semester.
Prerequisite: English 172.
(3) II (Robinson)

203 — OLD ENGLISH. A study of Old English language and literature.
(3) I (Moore)

204 — MIDDLE ENGLISH AND MODERN ENGLISH. The transition from Old to Middle English; the major ME dialects; reading in prose and poetry. The transition to Modern English; phonetic changes; sources of the vocabulary; rhetoricians and grammarians, etc.
(3) II (Cutler)

205 — SURVEY OF MIDDLE ENGLISH LITERATURE. Romance, drama, lyrics, and ballads.
(3) II (Cutler and Moore)

206a-d — SEMINAR: STUDIES IN THE ENGLISH ROMANTIC PERIOD.
(3 ea.) II (Ward)

210 — SEMINAR: BIBLIOGRAPHICAL STUDIES. This course is required of all candidates for the M.A. degree. It should be taken at the beginning of graduate work.
(3) I (Brady)

212a-d — SEMINAR: STUDIES IN MEDIEVAL LITERATURE.
(3) II (Cutler and Moore)

213a-d — SEMINAR: STUDIES IN RESTORATION AND EIGHTEENTH CENTURY LITERATURE. Emphasis upon one: Johnson and his circle, Swift, the Romantic Revolt, the foreign relations of English Literature in the eighteenth century, or the theory and practice of Neoclassicism.
(3) II (Cooke)

214a-d — SEMINAR: STUDIES IN VICTORIAN LITERATURE. Intensive studies in the social and literary significance of Arnold, Browning, Tennyson, Mill, Carlyle, and Ruskin. (3) II (Shine)

215a-d — SEMINAR: STUDIES IN LITERARY CRITICISM. These seminars seek primarily to present the problems of criticism, structural and historical. Critical backgrounds will be stressed so that critical studies in English literature may be made. (3) I (Graduate Staff)

216a-d — SEMINAR: STUDIES IN AMERICAN LITERATURE BEFORE 1900. (3) I, II (Spivey and Knight)

217a-d — SEMINAR: STUDIES IN CONTEMPORARY AMERICAN LITERATURE. (3) I, II (Spivey and Knight)

224a-d — SEMINAR: STUDIES IN ENGLISH LITERATURE FROM 1500 TO 1660. A preliminary survey of the literary and cultural trends of the period is followed by directed research based upon the work on one writer, one group of writers, or one literary type. (3) II (Stroup)

500-1, 2, 3 — THESIS. (0) I, II (Graduate Staff)

GERMAN

The Department of German requires as a prerequisite for the master's degree, attainment in German equivalent to that required for a German major. The number of hours of German required for the M.A. degree varies depending upon the advanced courses the student may be asked to take and/or permitted to take in related departments. The courses listed below will be given as scheduled and any additional semester when requested by a sufficient number of students.

105a-f — INDEPENDENT WORK IN GERMAN. This course is designed for students who wish to do advanced work in German on any subject. It is not limited to majors in the department. (3) I, II, S (Staff)

106a — ADVANCED SCIENTIFIC READING. This course is designed for students of the Physical and Biological Sciences. Reading is done in recent German scientific journals and books, in line with the student's special interest. (3) I, II, S (Staff)

Prerequisite: German 20b or 21b or permission of Department.

106b — ADVANCED SCIENTIFIC READING. Continuation of 106a. (3) I, II, S (Staff)

Prerequisite: German 106a or permission of Department.

PROSEMINARS IN THE 18th, 19th, AND 20th CENTURY GERMAN LITERATURE. A balanced selection of works from one representative author of each century will be studied in each course, and written reports will be assigned on various subjects related to his writing. (Staff)

Prerequisite for any Proseminar Course:
6 semesters of German.

112 — PROSEMINAR IN KLEIST. (2) I

113 — PROSEMINAR IN HAUPTMAN. (2) II

- 114 — PROSEMINAR IN SCHILLER. (2) I
115 — PROSEMINAR IN GRILLPARZER. (2) II
116 — PROSEMINAR IN THOMAS MANN. (2) I
117 — PROSEMINAR IN LESSING. (2) II
118 — PROSEMINAR IN HEBBELL. (2) I
119 — PROSEMINAR IN SUDERMANN. (2) II

143a, b.— LIFE AND WORKS OF GOETHE. The principal literary works will be read and special attention devoted to autobiographical material, letters, and diaries.

Prerequisite: 6 semesters of German. (3) I, II, S (Hegeman)

150 — ORIGIN AND DEVELOPMENT OF THE GERMAN LANGUAGE.

This introductory course in Germanic Philology traces the various stages in the development of the German language up to the present. Special emphasis is given to the relationship of German and English words.

Prerequisite: 6 semesters of German. (3) I, II, S (Staff)

151 — INTRODUCTION TO MIDDLE HIGH GERMAN. This is essentially a literary course with only a necessary minimum of Middle High German grammar. Selections will be read from both the epic and lyric poetry of the period and reports will be given on assigned topics.

Prerequisite: 6 semesters of German. (3) I, II, S (Hegeman)

152 — ADVANCED GERMAN CONVERSATION AND COMPOSITION.

This course is primarily one for German majors, particularly those planning to teach German. It will involve intensive practice in the writing of German prose, together with some review of German grammar.

Prerequisite: 6 semesters of German. (3) I, II, S (Staff)

204a — GERMAN DRAMA OF THE 19th CENTURY. This course is a study of the German Drama from Schiller's "Die Braut von Messina" to 1870.

Prerequisite: 6 semesters of German. (3) I (Whitaker)

204b — THE GERMAN NOVELLE. This course traces the origin and development of the German Novelle from Goethe to Thomas Mann.

Prerequisite: German 204a or permission of Department. (3) II (Whitaker)

205a, b — GERMAN LITERATURE OF THE 20th CENTURY. Extensive readings, discussions, and comprehensive reports on the leading literary minds and movements of this century.

Prerequisite: 6 semesters of German. (3) I, II, S (Bigge)

206 — THE AGE OF GOETHE. A seminar devoted to the investigation of one or more topics in the literature and social development of Germany during the period 1750 to 1825.

Prerequisite: 6 semesters of German. (3) I, II (Hegeman)

JOURNALISM

The following courses are open to properly qualified graduate students who may receive credit for them. No major programs in Journalism are offered for advanced degrees at present.

100a — NEWS REPORTING. Instruction and practice in news gathering, news evaluation, and news writing.

Prerequisite: Journalism 22.

(3) I, II (McCauley)

100b — NEWS REPORTING. A continuation of Journalism 100a with emphasis on special fields of information.

Prerequisite: Journalism 100a.

(3) I, II, S (McCauley)

101 — COPYREADING AND EDITING. Instruction and practice in newspaper deskwork. Preparation of local, state, telegraph, and features; picture editing, and page make-up. Laboratory 6 hours.

Prerequisite: Journalism 100a.

(3) I, II (McCauley)

102 — COMMUNITY JOURNALISM. A study of the problems which confront the community weekly and the small city daily.

(3) I, S (Portmann)

103 — NEWSPAPER ADMINISTRATION. A study of the business, circulation, advertising, and accounting divisions of the newspaper with special emphasis on the community newspapers.

(3) II (Portmann)

105 — LAW OF THE PRESS. A study of the special laws of libel, copyright, and regulatory provisions that pertain to the press.

(2) II, S (Plummer)

106 — INFLUENCE OF THE NEWSPAPER. A course devoted to the examination of criticism of the modern press and an evaluation of the influence of the press in the twentieth century.

Prerequisite: permission of Department.

(3) I, II, S (Moore)

107 — EDITORIAL WRITING. A study of editorials, editorial columns, and editorial pages. Publication of copy encouraged.

Prerequisite: Journalism 22.

(2) I, II (McCauley)

108 — HISTORY OF JOURNALISM. A study of the rise and development of American journalism and newspapers.

Prerequisite: permission of Department.

(3) II (Portmann)

109 — TYPOGRAPHY. Instruction and practice in typographic composition. Use of type faces in news editing. Study of typography in the make-up of American newspapers. Laboratory, four hours.

(2) I, II (Portmann)

110 — SUPERVISION OF HIGH SCHOOL PUBLICATIONS. A study of the problems that confront the adviser of the high school newspaper or magazine. Open to advisers or prospective advisers with consent of the instructor.

(3) S (Portmann)

111 — VERBAL CRITICISM. A study of words and their synonyms with reference to developing accuracy in use of the English language in journalistic work.

(3) I, II, S (McCauley)

112 — CRITICAL WRITING FOR THE PRESS. The function of criticism in journalism. Reviewing of motion pictures, plays, concerts, and books for newspapers with emphasis upon student work in Kentucky newspapers.

(3) I, II, S (McLaughlin)

114 — NEWSPAPER ADVERTISING AND PROMOTION. Relations of newspapers with retail advertisers; newspaper advertising department organization; advertising rate structures; classified advertising; legal advertising; organization and development of the promotion department.

(3) I, II, S (Portmann)

115 — ADVERTISING TYPOGRAPHY AND LAYOUT. A study of the principles of typographic families and illustrations and decorations that pertain to layout in modern advertising. Practical work with merchants included in the latter part of the course. Lecture, 2 hours; laboratory, 4 hours.

(3) II (Portmann)

118 — PUBLICITY. Lectures and practice dealing with the aims and methods of writing news and special articles for public relations programs of business, schools, colleges, libraries, and of the social service organizations.

(3) II, S (Plummer)

120 — SEMINAR IN PUBLIC OPINION. A detailed examination of techniques developed and used by the press in influencing public opinion. Specific cases studied.

Prerequisite: permission of Department.

(3) (Moore and Plummer)

123 — FEATURE WRITING. Instruction and practice in writing features. Lectures, readings, and reports directed toward discovering, gathering, organizing, writing, and marketing feature articles.

Prerequisite: permission of Department.

(3) I, II (Plummer and Moore)

125 — MAGAZINE ARTICLE WRITING. Lectures, personal conferences, and practice in writing and submitting material for publication in magazines; study of the markets for this material; free-lance article writing.

Prerequisite: permission of Department.

(3) II, S (Moore)

127 — REPORTING PUBLIC AFFAIRS. Instruction and practice in reporting the news originating in courts and other public institutions.

Prerequisites: Journalism 100b and permission of Department.

(3) II (Plummer)

150 — RADIO NEWS SCRIPTS. Instruction and practice in writing news and feature material for radio presentation.

Prerequisite: Journalism 22.

(2) I, II (Moore)

LIBRARY SCIENCE

The University provides professional education for library work through the Department of Library Science.

Professional courses leading to the master's degree are designed primarily for majors in library science but non-majors may be admitted on approval of the Head of the Department. Students in the College of Education who are

working for the M.A. or M.S. in Education may elect courses in library science to fulfill the Southern Association requirements for teacher-librarians. Those interested should consult with the Department for guidance in the selection of all such courses.

101a-d — INDEPENDENT WORK. Conferences, assigned readings, reports, etc.

Prerequisites: L. S. 129, 133a, 145, 152, and either 110 or 121.

(1 ea.) I, II, S (Staff)

110 — THE LIBRARY IN THE SCHOOL. A study of the school library as a functioning organization.

(3) I, S (Wofford)

121 — INTRODUCTION TO LIBRARY WORK. An orientation course designed to give students a general understanding of libraries and library work.

(3) I, S (Martin)

127a — BOOKS AND RELATED MATERIALS FOR CHILDREN AND YOUNG PEOPLE. Designed for school librarians but open to students preparing to work with children and young people.

(3) I, S (Wofford)

127b — BOOKS AND RELATED MATERIALS FOR CHILDREN AND YOUNG PEOPLE. A continuation of 127a.

Prerequisite: L. S. 127a.

(3) II, S (Wofford)

129 — CATALOGING AND CLASSIFICATION. A study of the fundamental principles and methods of classification and cataloging books and related materials.

(3) I, S (Whitten)

133a — REFERENCE AND BIBLIOGRAPHY. A study of the essential reference works, including dictionaries, encyclopedias, atlases, yearbooks, and periodical indexes.

(3) I, S (Poste)

133b — REFERENCE AND BIBLIOGRAPHY. A continuation of L. S. 133a.

Prerequisite: L. S. 133a.

(3) II, S (Poste)

139 — LIBRARY PRACTICE. Observation and supervised practice in a school library. This course fulfills a requirement of the Southern Association for school librarians.

(3) II, S (Roser)

145 — ORGANIZATION OF LIBRARY MATERIALS. A course designed to give the beginning librarian practical instruction in the acquisition and organization of library materials.

(3) I, S (Whitten, Wofford)

152 — BOOK SELECTION. A general study of book selection principles and methods, with emphasis on printed materials as they interpret modern problems.

(3) I, S (Martin)

212 — THE PUBLIC LIBRARY. A study of the public library as a functioning institution.

(2) I, S (Martin)

214 — THE COLLEGE AND UNIVERSITY LIBRARY. A study of the college and university library as a functioning institution.

(2) I, II, S (Poste, Whitten)

227 — READING FOR YOUNG PEOPLE. This course will consider reading needs and interests of young people together with current studies in the field.

Prerequisites: L. S. 127a, b, or equivalent. (2) II, S (Wofford)

229 — ADVANCED CATALOGING AND CLASSIFICATION. Expansion of the principles and methods of classification and cataloging books and related materials.

Prerequisite: L. S. 129 or equivalent. (3) II, S (Whitten)

232 — LIBRARY WORK WITH CHILDREN. A study of the origin and present status of library work with children in school and public libraries.

(4) I, S (Martin)

233 — SUBJECT BIBLIOGRAPHY. A comprehensive study of basic reference materials in the humanities, social sciences, and natural sciences.

Prerequisites: L. S. 133a, b, or equivalent. (3) II, S (Poste)

235 — GOVERNMENT PUBLICATIONS. A study of the problems of acquisition, preparation and use of United States federal, state, and local government publications.

Prerequisites: L. S. 133a, b, or equivalent. (2) II (Whitten)

242 — HISTORY OF BOOKS. This course considers the records of early man, invention of the alphabet, early writing materials, manuscript books, the invention of printing, and book production in modern times.

(2) I (Martin)

250 — ADULT READING GUIDANCE. Survey of the significant published studies of adult reading, as a guide to book selection through knowledge of adult needs and interests.

(3) II, S (Martin)

252 — ADVANCED BOOK SELECTION. Emphasis on the more imaginative and creative forms of literature, especially the place of fiction in the modern public library.

Prerequisite: L. S. 152 or equivalent. (4) II, S (Martin)

254 — SEMINAR. Discussions and reports on current problems and trends in library service. Consideration of methods of investigating library problems. Assistance in the preparation of the thesis.

(2) II, S (Staff)

RADIO ARTS

While no advanced degrees are offered at present with a major in Radio Arts, graduate students may find the following courses of value if they plan to enter any of the phases of radio work or if a knowledge of radio procedures would be useful in any other occupational activity.

Departmental facilities include an FM transmitter, three studios, two announce booths, three studio control rooms, library, record room, sound effects room. Also daily broadcasts are scheduled over nearby commercial stations.

101 — RADIO REGULATIONS. Two recitation or lecture periods per week, devoted to an intensive study of Parts 2, 3, and 4 of the Rules and Regulations of the Federal Communications Commission, including various ap-

plication procedures; the music licensing regulations of ASCAP, SESAC, and BMI, and programming practices; censorship through FCC licensing practices; libel and slander; copyrights as applied to broadcasting. (2) (Sulzer)

102 – ADVANCED RADIO ANNOUNCING. One recitation or lecture period and two hours laboratory per week. The study of techniques and theory pertaining to specialized radio announcing, news commentating, public events, man-on-the-street, the interview, round-table participation and moderation, public forum on the radio, master of ceremonies, concert announcing and intermission comment.

Prerequisite: Radio Arts 2a, or permission of instructor. (2) (Henderson)

105a – RADIO SCRIPT WRITING. One recitation and two hours laboratory per week. Practice in script-writing in the various short forms; music continuities, commercials, audience participation programs, interviews, talks, with special emphasis on the writing tools of radio. (2) (Henderson)

105b – RADIO SCRIPT WRITING. One recitation and two hours laboratory per week. A continuation of 105a. Practice in writing the larger forms; original dramas, adaptations, variety programs, serials, children's programs, public service programs. Analysis and evaluation of the various forms; consideration of writing for television.

Prerequisite: Radio Arts 105a. (2) (Henderson)

106a – RADIO PRODUCTION. One recitation and two hours laboratory per week. The fundamentals of radio production, including program planning, casting, rehearsals. Practice in production. (2) (Sulzer)

106b – RADIO PRODUCTION. Conferences and laboratory three hours per week. A continuation of 106a. Advanced practice in radio production involving research on assigned projects for radio presentation in educational broadcasts.

Prerequisites: Radio Arts 105a, b, and 106a, or permission of instructor. (2) (Sulzer)

110 – PROSEMINAR. One recitation per week. Lectures and outside readings devoted to radio and its relation to other communications media from the standpoints of structure, function, process, basic tools of research, control, content, radio as a channel, the audience, and effect.

Prerequisite: permission of instructor. (1) (Sulzer)

ROMANCE LANGUAGES AND LITERATURE

The Department of Romance Languages requires, as a prerequisite for the master's degree, attainment in French or Spanish equivalent to that required of an undergraduate major in either French or Spanish at the University of Kentucky.

The Department of Romance Languages offers the doctor's degree in the following fields: Linguistics, French Literature from the Sixteenth Century to Twentieth, Spanish Literature from the Golden Age to the Twentieth Century, and in Modern Spanish American Literature.

FRENCH

103a, b – ADVANCED PHONETICS. A study of the phonetics of Romance Languages with special attention to French. A course to prepare teachers of phonetics. (3) I, II, or S (Schick)

109a — FRENCH LITERATURE OF THE NINETEENTH CENTURY.
A study of French Romanticism. Lectures and reading.

(3) I, II, S (Ryland)

109b — FRENCH LITERATURE OF THE NINETEENTH CENTURY.
A study of Realism and Naturalism in France. Lectures and reading.

(3) I, II, S (Ryland)

110a — FRENCH LITERATURE OF THE SEVENTEENTH CENTURY.
A study of the literature of this period, not including Moliere, Corneille and Racine.

(3) I, II, S (Eilertsen)

110b — FRENCH LITERATURE OF THE SEVENTEENTH CENTURY.
The plays of Moliere, Corneille and Racine.

(3) I, II, S (Eilertsen)

113a, b — ADVANCED FRENCH GRAMMAR. A study of the grammar and syntax of the French language; an introduction to French etymology.

(4) I, II, S (Ryland)

114a-h — INDEPENDENT WORK IN ROMANCE LANGUAGES. Independent work designed to meet individual needs of students, as verified by consultation with the staff.

(3) I, II, S (Staff)

115a, b — FRENCH LITERATURE OF THE EIGHTEENTH CENTURY.
A survey of the literature of the period. Lectures and reading.

(3) I, II, S (Walker)

116a, b — FRENCH LITERATURE OF THE TWENTIETH CENTURY.
A study of recent writers. Lectures and selected readings.

(3) I, II, S (Horsfield)

122a, b — ADVANCED FRENCH CONVERSATION. Studies in diction, poetry reading and elocution.

(2) I, II, S (Ryland)

201a, b — FRENCH LITERATURE OF THE RENAISSANCE. A study of the works of Villon, Marot, Rabelais, Calvin, Montaigne, Ronsard and others.

(3) I, II, S (Ryland)

202a, b — OLD FRENCH. A study of the grammar and syntax of Old French. Readings from the Chanson de Roland.

(3) I, II, S (Schick)

204a, b — ROMANCE PHILOLOGY. A study of some of the elements of Vulgar Latin. The phonology, etymology and historical grammar of the Romance Languages; comparative Romance Philology.

(3) I, II, S (Schick)

205a, b — SEMINAR IN FRENCH LITERATURE.

(3) I, II, S (Staff)

SPANISH

102a, b — ADVANCED SPANISH GRAMMAR AND COMPOSITION.
A study of the grammar and syntax of the Spanish language.

(3) I, II, S (Server)

104a, b — SPANISH LITERATURE OF THE SEVENTEENTH CENTURY. A study of the novel, drama, poetry of the Golden Age. Lectures and reading.

(3) I, II, S (Hernandez)

106a, b — SPANISH LITERATURE OF THE TWENTIETH CENTURY.
A study of recent authors. Lectures and readings. (3) I, II, S (Server)

108a, b — SPANISH AMERICAN LITERATURE. A study of the representative literature of the Spanish American countries. (3) I, II, S (Server)

112a — SPANISH LITERATURE OF THE NINETEENTH CENTURY.
A study of Romanticism in Spanish Literature. (3) I, II, S (Server)

112b — SPANISH LITERATURE OF THE NINETEENTH CENTURY.
Latter half of century; the Realistic novel; neo-Romanticism.
(3) I, II, S (Server)

203a — OLD SPANISH. A study of the vocabulary and grammar of Old Spanish contrasting and comparing with Modern Spanish.
(3) I or II (Server)

203b — OLD SPANISH. Reading in texts of Old Spanish.
(3) II or S (Server)

206a, b — SEMINAR IN SPANISH LITERATURE.
(3) I, II, S (Staff)

500-1, 2, 3 — THESIS.
(0) I, II, S (Staff)

SPEECH (See English)

II. SOCIAL SCIENCES

ANTHROPOLOGY

103a-d — INDEPENDENT WORK IN ANTHROPOLOGY. Individual research problems in archaeology, ethnology, or physical anthropology. (Offered every year.) (3) I, II (Staff)

107 — ETHNOLOGY OF THE NEW WORLD. Cultures and physical types of the American Indians during and after White settlement. (Northwestern North America is not included.) (3) II (Essene)

110a, b — FIELD METHODS IN ANTHROPOLOGY. An advanced course in excavating and reporting of archeological sites, and in cataloguing and preparing specimens in the museum.
Prerequisites: Anthro. 1, 2, 10, 107, and 115. (3) S (Staff)

111 — ARCHAEOLOGICAL THEORY AND METHODS. The concepts and aims of archaeology, its history as a scientific discipline and its present role in the social sciences.
Prerequisites: Anthro. 2, 114, 115, or 116. (3) II (Woodbury)

114 — PREHISTORIC MESO-AMERICA AND PERU. An intensive study of the native American civilizations: their origins, development and achievements. (3) I (Woodbury)

115 — NORTH AMERICAN ARCHEOLOGY. A study of the origin and growth of prehistoric American Indian cultures north of Mexico as revealed by archeological data. (3) II (Woodbury)

116 — BEGINNINGS OF CIVILIZATION. Prehistory of the Near East, the earliest evidences of agriculture, pottery, smelting, writing, law codes, kingship, priesthood, and science.
Prerequisite: one course in Anthro. (3) I (Woodbury)

117 — DIFFUSION OF CIVILIZATION. Prehistory of the Far East, Europe, and Negro Africa and ethnology of primitive tribes in these areas, and the spread of Near Eastern civilization.
Prerequisite: Anthro. 116. (3) II (Woodbury)

118 — CULTURES OF THE SOUTHWESTERN UNITED STATES. Development of sedentary and nomadic Indian peoples, from earliest times to the present. (3) II (Woodbury)

125 — PHYSICAL ANTHROPOLOGY. Lecture-laboratory course on the biological nature of Man: the primates, fossil man, races, race mixture, constitutional anthropology and human growth.
Prerequisite: Anthro. 1 or three hours in any other Bio. Science. (4) II (Snow)

126 — HUMAN ANCESTRY. A lecture-laboratory course on human origins and the fossil remains of Pleistocene man throughout the world; the lineage, formation and interbreeding of modern races.
Prerequisite: Anthro. 125 or special permission. (4) II (Snow)

130 — NORTH PACIFIC COAST CULTURES. Ethnology of the maritime peoples of western North America and Northeast Asia. Cultural connec-

tions between America and Asia will be stressed. Lectures, 3 hours.

Prerequisites: Anthro. 1 and 2.

(3) I (Essene)

131 – ETHNOLOGY OF OCEANIA. A survey of the various cultures to be found on the islands of the Pacific Ocean. Both aboriginal and modern acculturated societies will be considered. Lectures, 3 hours.

Prerequisites: Anthro. 1 and 2.

(3) II (Essene)

140 – MYTHOLOGY. The unwritten literature of primitive peoples. Themes, diffusion, style, literary devices, and function of myths.

(3) II (Essene)

141 – APPLIED ANTHROPOLOGY. Application of anthropological methods to contemporary practical problems such as acculturation, colonial administration, intercultural education, and race relations.

Prerequisite: Anthro. 2.

(3) II (Essene)

142 – CULTURE AND PERSONALITY. The cultural basis of personality. Personal character considered as the result of culturally fostered patterns. The ideal personality in several selected societies.

(3) II (Essene)

150a-d – TUTORIAL SEMINAR. Anthropological methods and theory.

(2) I, II (Staff)

180 – ANTHROPOLOGY: MAN AND HIS WORKS. Survey of the major fields of Anthropology, physical, prehistory, and ethnology and a guide to source material. Designed for students not contemplating further work in Anthropology.

(3) I, S (Staff)

221a, b – SEMINAR. Intensive work in particular fields of anthropology. All students during a given semester will be assigned related phases of the same problem. Primarily for students working toward a master's degree in anthropology.

(2) I, II (Staff)

BUSINESS EDUCATION (See Education)

ECONOMICS AND COMMERCE

REQUIREMENTS FOR ADVANCED DEGREES IN ECONOMICS AND COMMERCE

THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

1. Admission to study for the degree is open to students who hold:
 - a. A Bachelor of Science in Commerce degree of the University of Kentucky, or
 - b. A bachelor's degree of an accredited college or university.
2. Graduate study in business presumes a minimum preparation in economics and business including the completion of the following courses or their equivalent:

Principles of Economics	3 hrs.
Principles of Accounting	6 hrs.
Principles of Marketing	3 hrs.

Labor Economics	3 hrs.
Money and Banking	3 hrs.
Statistical Method	3 hrs.
Corporation Finance	3 hrs.
Business Law	6 hrs.
Industrial Management	3 hrs.

3. Admission to study for the degree requires the completion of 27 semester hours of the foregoing courses. The remaining courses, if numbered above 100, may be taken during graduate study and presented as electives toward the 30 semester hour course requirement. The candidate is not eligible for the M.B.A. degree until he has completed all of the foregoing courses in either undergraduate or graduate study.

4. A minimum of 18 semester hours must be presented in courses numbered 200 or above. The remaining 12 required hours may be taken in any approved courses numbered 100 or above. With the permission of the student's Director of Graduate Studies, the candidate may submit a maximum of 9 hours in related courses outside the College of Commerce.

5. The course requirements are as follows:

200 — Business Economics	3 hrs.
212a-c — Research Problems in Econ. & Com.	3 hrs.
237 — Advanced Business Management	3 hrs.
Two of the following courses:	6 hrs.
217 — Corporate Financial Policy (Econ. 211, Adv. Money & Banking, may be offered to meet the finance course requirement.)	
255 — Adv. Personnel Management	
260 — Adv. Marketing Management	
An advanced course in Accounting	2 or 3 hrs.
Electives	13 or 12 hrs.
Total	<u>30 hrs.</u>

In special cases the student's Director of Graduate Studies may approve the substitution of another graduate course for a required course.

6. Further requirements, in addition to the completion of prescribed courses are as follows:

- a. Residence for at least two semesters at the University of Kentucky as a full-time student, or its equivalent as a part-time student.
- b. The maintenance of a minimum average of grade B in all courses taken as a graduate student. A minimum grade of C is required for credit in a course.
- c. If essential to the program pursued by the student, a reading knowledge of a modern foreign language may be required by the student's Director of Graduate Studies.
- d. A comprehensive final examination.

THE DEGREE OF MASTER OF SCIENCE

In addition to the general regulations of the Graduate School the candidate for the master's degree in economics or commerce must satisfy departmental requirements as outlined below.

He must have a knowledge of course material in accordance with the following distribution:

- (1) The fundamentals of economic history.
- (2) Advanced economic theory which for economics majors must include both current economic theory and its historical development, while for commerce majors it may be confined to modern or current theory.
- (3) A knowledge of elementary statistics.
- (4) A knowledge of introductory accounting.
- (5) Knowledge of a reasonable range of institutional economics courses which must include money and banking and public finance and two additional fields, as for example, labor and public utilities for economics majors, or marketing and management for commerce majors.

With the advice and consent of the major professor and the dean the student may modify the requirement as to the spread of institutional courses in economics and commerce.

The student's major and minor fields in terms of courses must be approved by his major professor.

A thesis must be written in the student's field of major interest.

The student must acquire at least one semester hour in the economics seminar which is to be taken preferably during the second half of his residence period. By this time he will be ready to begin work on his thesis and report at intervals before the seminar.

The candidate must pass a written comprehensive examination on the range of subject matter and an oral examination on the thesis.

THE DOCTOR'S DEGREE IN ECONOMICS

Before taking the qualifying examination through which the student secures the status of a candidate for the degree of Doctor of Philosophy as required by the regulations of the Graduate School, it is expected that the student will have met the requirements for the master's degree as to general distribution of course material or the substantial equivalent.

The scope of the qualifying examination will include a comprehensive written test of the student's ability to deal with economics materials and will cover the following classes of subject matter: (1) elementary accounting, statistics, and economic history; (2) advanced economic theory; (3) four other fields in economics or in business; (4) a minor subject closely related to economics, such as business administration, political science, agricultural economics, or sociology.

If the student has passed an examination covering the range of course material required for the master's degree, with the approval of his special committee, the examination need not include the subjects in class one.

The oral part of the qualifying examination will be administered ordinarily in connection with a seminar and will test the student's preparation and ability to do research in his chosen field of specialization.

Suggested *fields of study* in economics and commerce and possible courses comprising such fields are as follows:

Economic theory: Economics 110, 115, 153, 203, 204, 218a, b; and Farm Econ. 202a, b, 203.

Economic history: Economics 125, 134, 147 and 148.

Statistics: Economics 107, 142 and 210; Commerce 149 and 150; Math. 120; and Psy. 215.

Private Finance: Economics 105, 209, 211; Commerce 117, 129, 131, 160.

Public finance: Economics 104, 124, 157, 206a, b, 207a, b; Commerce 133 and 159; Law 153, 161a, b; and Political Science 177a, b.

Industrial relations: Economics 102, 130, and 155; Law 180; Psychology 106; and Political Science 177b.

Utilities and transport: Economics 103 and 126; and Law 150, 161a, b.

Accounting: Commerce 108, 113, 118, 129, 132a, b, 133, 146, 159, and 222.

Industrial management: Commerce 118, 137, 138, 139, and 145; Economics 155; and Psychology 106.

Marketing: Commerce 119, 136, 140, 141, and 149; Economics 127; and Mar. and R. F. 101.

Risk and risk bearing: Commerce 143 and 144; and Law 145.

Normally two or three courses should represent the minimum level of achievement in each field covered by the qualifying examination, and economic theory should include a course in business cycles.

Of the total semester hours presented by the candidate for the degree not less than fifteen semester hours must represent courses and seminars numbered 200 and above.

DESCRIPTION OF COURSES

ECONOMICS

102 — LABOR ECONOMICS. Insecurity, wages and income, substandard workers, industrial conflict; wage theories, the economics of collective bargaining, unionism in its structural and functional aspects; recent developments.
Prerequisite: Economics 52. (3) I (Carter)

103 — TRANSPORTATION. Railways, waterways, highways, airways. Rates, service, management, regulation.
Prerequisite: Economics 52. (3) I (Sullivan)

104 — PUBLIC FINANCE. A study of public receipts; public expenditures; the principles of taxation with special reference to their application to the tax systems, federal and state.
Prerequisite: Economics 52. (3) I (Martin and Sullivan)

105 — MONEY AND BANKING. Nature and functions of money; the importance of credit; relation of money and credit to prices; bank deposits and loans; complete study of our national banking system.

Prerequisite: Economics 52.

(3) I, II (Masten)

107 — STATISTICAL METHOD — Introduction to the sources of business data, the use of calculating machinery, tabulation, simple charts and graphs, the average, dispersion, correlation, and time series analysis.

(3) I (Connor and Massie)

110 — BUSINESS CYCLES. The nature and characteristics of the economic factors which underlie the cyclical fluctuations in business conditions; the methods of business and investment forecasting.

Prerequisite: Economics 52.

(3) I, II (Haynes)

112a-f — INDIVIDUAL WORK IN ECONOMICS. Students confer individually with the instructor.

(1 ea.) I, II (Staff)

115 — VALUE AND DISTRIBUTION THEORY. The major emphasis is on current theory.

(3) I (Sullivan)

124 — STATE AND LOCAL TAXATION. Classified property taxes; separation of sources of revenue, taxation of banks, forests, public utilities, mines, and rural and urban real estate; income, inheritance and sales taxes.

(3) II (Martin)

125 — EVOLUTION OF ECONOMIC INSTITUTIONS. The rise of economic institutions such as property rights, capital formation, contractual labor, *et cetera*.

Prerequisite: Economics 52 or permission of instructor.

(3) II (Jennings)

126 — ECONOMICS OF PUBLIC UTILITIES. Growth and development of public utilities; valuation; rate-making; financing; the holding company; regulation; current problems; accounting.

Prerequisite: Economics 52.

(3) I (Haynes)

127 — INTERNATIONAL ECONOMICS. Free trade; protectionism; preferential tariffs; colonial tariff policies; dumping; commercial treaties; control of raw materials, and the movement of capital; international debts; reparations.

Prerequisite: Economics 52.

(3) II (Sullivan)

130 — LABOR LEGISLATION. The status of labor law, mediation, conciliation, arbitration, the minimum wage, the eight-hour day, unemployment relief, safety and health legislation, and social insurance.

Prerequisite: Economics 52.

(3) II (Carter)

134 — ADVANCED ECONOMIC HISTORY OF THE UNITED STATES. Population growth, immigration, territorial expansion, agriculture, manufactures, tariff, labor, industrial combinations, commerce, transportation facilities, money and banking, and conservation.

(3) II (Jennings)

142 — INDEX NUMBERS. The problems of sampling, selection of formula, and weighting in the construction of index numbers.

Prerequisite: an elementary course in statistics.

(2) II (Connor)

147 — AMERICAN BUSINESS LEADERS. Biographical sketches of a selected list of men including their business achievements and their relation-

ships to the economic and social life of their time.

Prerequisite: Economics 3 or permission of instructor. (2) I (Jennings)

148 — EUROPEAN BUSINESS LEADERS. Biographical sketches of a selected list of men including their business achievements and their relationships to the economic and social life of their time.

Prerequisite: Economics 2 or permission of instructor. (1) II (Jennings)

153 — THE ECONOMICS OF CONSUMPTION. The place of consumption in economic theory; the institutional background of our consumer habits; sources of information on consumption; and government regulation of consumer standards.

Prerequisite: Economics 52. (2) II (Sullivan)

154 — URBAN REAL ESTATE. Urban land economics; the real estate business; essentials of real estate law and contracts, the financing of real estate transactions, property valuation and appraisal, the management of real estate properties.

Prerequisite: Economics 52. (3) II (Pickett)

155 — INDUSTRIAL RELATIONS. Historical development of industrial relations; the economic implications of job analysis, recruitment, selection and training for industry; wages, hours, promotion and health policies; employee representation, collective bargaining; union-management cooperation.

Prerequisite: Economics 52. (3) II Carter

157 — GOVERNMENT FINANCE ADMINISTRATION. Government budget, accounting, debt, purchasing, treasury, revenue, and auditing administration is examined; illustrations are drawn from federal, state, and local experience.

(3) II (Martin)

165 — COMPARATIVE ECONOMIC SYSTEMS. A study of capitalism, socialism, fascism, communism and cooperation, with attention to current experiments in economic planning.

Prerequisite: Economics 52. (3) I (Masten)

200 — BUSINESS ECONOMICS. The interrelations of economic laws with the social, political and legal framework of business, especially from the point of view of the industry and of the firm.

(3) I (Hargreaves)

202a-f — SEMINAR. An extended investigation of some specific topic with a view to giving training in methods of research and studying intensively a particular subject in the field of economics.

(1 ea.) I, II, (Carpenter)

203 — HISTORY OF ECONOMIC THOUGHT. A survey of the history of economic thought from the ancient period to about the end of the Classical School.

Prerequisite: Economics 52. (3) I (Hargreaves)

204 — SURVEY OF ECONOMIC THEORY SINCE THE AUSTRIAN SCHOOL. This course is virtually a continuation of course 203.

(3) II (Hargreaves)

206a — MUNICIPAL FINANCE. City and county budget and related problems are studied in reports and seminar.

(2) I (Martin)

206b — MUNICIPAL FINANCE. City and county debt, purchasing, treasury, and revenue problems are studied in reports and seminar.

(2) II (Martin)

207a, b — PROBLEMS IN PUBLIC FINANCE. Depending on varying needs of public finance students from time to time, specific subject matter will be selected for study. Each student's report will indicate the class of problems intensively examined.

(2 ea.) I, II (Martin)

209 — HISTORY AND THEORY OF MONEY AND PRICES. The evolution of money, the rise of banking processes and the causes of fluctuations in the general price level.

(3) II (Carpenter)

210 — RESEARCH STATISTICS. The place of statistics in research method, the theory of statistical averages, the application of advanced statistical methods to economic data; the testing of economic theory.

Prerequisite: an elementary course in statistics.

(2) II (Connor)

211 — ADVANCED MONEY AND BANKING. A theoretical study of contemporary money and banking institutions with emphasis on central bank functions.

(3) II (Masten)

212a-f — RESEARCH PROBLEMS IN ECONOMICS. Students confer individually with the instructor.

(1 ea.) I, II (Staff)

218a, b — ECONOMIC THEORY. An intensive course covering the whole field of contemporary economic theory and the various analytical techniques used therein.

Prerequisite: Economics 52.

(3 ea.) I, II (Haynes)

255 — ADVANCED PERSONNEL MANAGEMENT. A critical examination of the principles, methods, policies and procedures related to the effective utilization of human resources in business concerns, consideration being given to mutual relationships.

(3) II (Carter)

COMMERCE

101a-c — SECRETARIAL JOB TRAINING. This course is designed to provide laboratory and office experience for senior secretarial students.

Prerequisite: Commerce 14b.

(1 ea.) I, II (Thomas)

108 — ACCOUNTING THEORY. The function of accounting, asset valuation, recognition of revenue and expenses, and classification of equities will be studied with a view to presenting a coordinated body of accounting theory.

Prerequisite: Commerce 96b.

(2) I (Haun)

109a, b — BUSINESS LAW. A survey of the principles of contracts, sales, bills and notes, and that portion of the law of torts applicable to business practices.

(3 ea.) I, II (Haun and Lewis)

113 — AUDITING. The theory of auditing, the valuation of assets, analysis of accounting procedure, and the presentation of statements. Special problems applicable to particular businesses will also be presented.

Prerequisite: Commerce 7b.

(3) II (Beals)

117 — CORPORATION FINANCE. Principles concerning the issue of securities, the management of the corporate income, the disbursement of dividends, the creation of sinking funds, and reorganization procedure.

Prerequisites: Commerce 7b; and Economics 52. (3) I, II (Pickett)

118 — COST ACCOUNTING. The place of cost accounting in the general field of accounting, special records and cost statistics, and application to particular businesses.

Prerequisite: Commerce 7b. (3) I (Beals)

119 — RETAIL MERCHANDISING. Selecting a business location, internal layout, departmentalization, merchandising control, store policies toward the public, training and management of personnel, and related subjects.

Prerequisite: Commerce 60. (3) II (McIntyre)

128 — ADVANCED COST ACCOUNTING. The use of standard costs, estimated cost systems and procedures, non-manufacturing costs, budgetary control, and management uses of cost data.

Prerequisite: Commerce 118. (3) II (Beals)

129 — CREDIT AND STATEMENT ANALYSIS. The theory underlying credit-granting; credit administration; analysis and interpretation of financial statements.

Prerequisite: Commerce 7a. (2) I (Haun and Beals)

131 — INVESTMENTS. Analysis of corporation statements for investment purposes; the security market; market influences on security prices; effect of interest changes on security prices; and the development of investment programs.

Prerequisite: Commerce 117. (3) II (Pickett)

132a, b — C. P. A. PROBLEMS. This course is designed to prepare students for C. P. A. examinations. Advanced accounting theory is stressed through the study of a wide range of problems.

Prerequisites: Commerce 96b and 146. (3 ea.) I, II (Haun and Beals)

133 — INCOME TAX PROCEDURE. The preparation of income tax returns for individuals and corporations of all classes and a practical application of principles of accounting.

Prerequisites: Commerce 96b and 146. (3) II (Haun)

136 — SALES MANAGEMENT. The case method is used, supplemented with outside reading and written reports.

Prerequisite: Commerce 60. (3) I (McIntyre)

137 — INDUSTRIAL MANAGEMENT. Emphasis is placed upon factory management, but an attempt is made to coordinate managerial aspects of business in its entirety.

Open only to students who have had the necessary prerequisite training. (3) I, II (Carter and Haynes)

138 — CASES IN MANAGEMENT. Emphasizes production, plant layout, wage payments, personnel management, production control, and related problems.

Prerequisite: Commerce 137. (3) II (Haynes)

139 — INDUSTRIAL PURCHASING. Organization of purchasing; relations with other departments; qualifications and training of buyers. Purchasing procedures; sources of supply; price negotiation; stores control; value analysis.
Prerequisite: Economics 52. (3) II (Coolsen)

140 — PROBLEMS IN ADVERTISING. A study of specific problems confronted by the marketing executive in the use of advertising as a selling tool, and of the general economic effects of advertising.
Prerequisite: Commerce 62. (2) I (McIntyre)

141 — INDUSTRIAL MARKETING. The structure of the industrial market to manufacturing, agricultural, mining, construction, trade and other industries.
Prerequisite: Economics 52. (3) I (Coolsen)

143 — LIFE INSURANCE. Economics of life insurance; organization and control; special forms of life insurance; fundamental principles of rate-making.
Prerequisite: Economics 52. (3) I (Hargreaves)

144 — PROPERTY AND CASUALTY INSURANCE. Public control; nature of contracts; analysis of reserve functions and rate-making processes.
Prerequisite: Economics 52. (3) II (Pickett)

145 — OFFICE MANAGEMENT. Planning and scheduling of work; employment procedures; supervision of employees, re-training, promotion; equipment.
(3) II (Speck)

146 — SPECIALIZED ACCOUNTING PROBLEMS. Fiduciary accounting, consolidations and mergers, foreign exchange and foreign branches or subsidiaries, utility accounting, and stock brokerage accounting.
Prerequisites: Commerce 96a, b. (3) II (Grady)

149 — MARKET RESEARCH. Training in the application of scientific method to research in fields of marketing. A major marketing investigation will be conducted by the class.
Prerequisites: Commerce 60 and a course in statistics. (3) I (Coolsen)

150 — BUSINESS STATISTICS. Advanced statistical techniques with special application in economics and business; a survey of the work of government and private research organizations; a study of general research methods.
Prerequisite: an elementary course in statistics. (2) I (Connor and Massie)

156 — BUSINESS REPORTS. Major emphasis is placed upon sources of data, compilation and arrangement of data, documentation, bibliographies and effective presentation of reports. Problems are assigned in the various areas of interest.
(2) I, II (Speck)

159 — GOVERNMENTAL ACCOUNTING. The requirement of adequate accounting systems for various governmental units, including the recording of usual transactions and the form and content of reports.
Prerequisite: Commerce 7b. (2) II (Beals)

160 — BUSINESS COMBINATIONS. Forms of combination; the problem of monopoly; federal and state anti-trust legislation and court decisions.
Prerequisite: Economics 52. (2) II (Massie)

162 — SMALL BUSINESS OPERATION. Application of management principles and techniques to the special problems of establishing and operating a small business enterprise.
(2) II (Massie)

217 — CORPORATE FINANCIAL POLICY. A study of financial management from the viewpoint of the corporate financial officer. Problems of planning the capital structure, issuing securities, the management of working capital and policies with reference to reserves, surplus and dividends. (3) I (Pickett)

222 — TAX ACCOUNTING PROBLEMS. Advanced tax accounting problems of a complex nature involved in income taxes, gift taxes, and death taxes under the federal and state laws.

Prerequisite: Commerce 133.

(3) II (Haun)

237 — ADVANCED BUSINESS MANAGEMENT. A functional study of business management. Control devices and procedures for carrying out and testing policies.

(3) II (Haynes)

260 — ADVANCED MARKETING MANAGEMENT. A critical study of significant trends, controversial issues and advanced techniques in the fields of marketing.

(3) II (Coolsen)

EDUCATIONAL PSYCHOLOGY (See Education)

FARM ECONOMICS (See Agriculture)

HISTORY

The Master's Degree in History

Students should submit evidence of good undergraduate preparation in the specific subject in which they propose to take the degree. In general, sixteen semester hours in history will suffice.

Unity of purpose and coherence in planning the program is an essential. At least one course should be of the seminar type, with some training in methods of graduate study.

Of the total number of hours, two-thirds will be required in history when a minor is offered in addition to the thesis.

An acceptable thesis which conforms to sound rules of historical research is required of every candidate. This thesis should indicate knowledge of sources, synthesis and bibliography. An examination will include courses, thesis topic, and generally related materials.

The Doctorate in History

Those who seek the doctorate in history should follow carefully the general directions governing the subjects of residence and courses as stated in the first part of this Bulletin.

The *applicant* does not become a candidate until he has satisfied the language requirements, passed the qualifying examination and has been approved by the Graduate School.

All further work for the doctorate in history is under the direction of a committee composed of members of the staffs of the candidate's major and minor departments appointed by the Dean of the Graduate School. The chairman will be the major professor under whose direction the candidate expects to write his dissertation. The student should consult this person at his earliest convenience. This committee with the student will outline his course of study, advise with him throughout his residence, conduct the comprehensive examination, and generally supervise the writing of his dissertation.

The candidate must submit to examinations in five fields in at least three areas of history, and he must offer two fields from the area of his major interest.

Area I. European History

- a. Ancient and Medieval
- b. Europe to 1789
- c. Europe since 1789

Area II. British History

- a. the history of England
- b. the British empire

Area III. American History

- a. American history to 1865
- b. American history since 1865

Area IV. Oriental History

- a. the Far East
- b. the Near East

Area V. Latin America

Area VI. Minor Subjects

I. American History

100a, b — THE DIPLOMACY AND FOREIGN POLICY OF THE UNITED STATES TO 1898. A survey designed to acquaint the student with the principles of American foreign policy.

Prerequisite: History 5a or equivalent.

(3) I (Hopkins)

105a — COLONIAL AMERICA. A study of the foundation of the English colonies; their political, social, and economic development; extension of their frontiers, inter-colonial wars, and external relations.

Prerequisite: one year of American or European history.

(3) II (Gilliam)

105b — THE AMERICAN REVOLUTION, 1763-1789.

Prerequisite: one year of American or European history.

(3) II (Taylor)

106a — COLONIAL LATIN AMERICA. A survey of the founding and development of the Latin American Colonies and their struggle for independence.

(3) I (Staff)

106b — LATIN AMERICAN REPUBLICS. This course will involve a study of the political, economic and social institutions, and problems of the Latin American Republics from attainment of independence to the present.

(3) II (Staff)

124a — SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES TO 1830. This course deals with changing phases of social and cultural life in America.

(3) I (England)

124b — SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES SINCE 1830. This course is a continuation of 124a.

(3) II (England)

132 – HISTORY OF AMERICAN AGRICULTURE. A survey of American agricultural history. (3) I, II (Wall, Hopkins)

140a-d – INDEPENDENT WORK. Under special conditions selected students may investigate special problems, with weekly reports to the instructor. (2) (Staff)

141 – TUTORIAL READING. (1) (Staff)

146 – HISTORY OF THE UNITED STATES, 1877-1901. American history since the end of reconstruction to the turn of the century. (3) I (Wall)

147 – RECENT HISTORY OF THE UNITED STATES. An intensive study of the principal movements and episodes in the history of the people of the United States from the Spanish-American War to the present. *Prerequisite: one year of American history.* (3) I (Clark, Wall)

151a – THE AMERICAN FRONTIER. A course dealing specifically with American expansion westward from the original colonies. *Prerequisites: History 5a, b or equivalents.* (3) I (Clark, Eaton)

151b – THE AMERICAN FRONTIER. A continuation of 151a. It will consider the Trans-Mississippi West. *Prerequisites: as for History 151a.* (3) II (Clark, Eaton)

180a – HISTORY OF THE OLD SOUTH. A study of the colonial beginnings and expansion of southern life, economics, and society. *Prerequisite: History 5a or equivalent.* (3) I (Eaton, Kirwan)

180b – THE SOUTH IN THE CIVIL WAR AND RECONSTRUCTION. An intensive study of constitutional theories as a background for secession. The political, social and constitutional history of the Confederacy and the Reconstruction of the Southern States. *Prerequisite: History 5b or equivalent.* (3) II (Eaton, Kirwan)

180c – HISTORY OF THE NEW SOUTH. The evolution of southern life and society, agrarian politics, relationships with other sections, industrial growth, and new leadership. *Prerequisite: History 180a.* (3) II (Clark)

II. England and the British Empire

131a – ENGLISH CONSTITUTIONAL HISTORY TO 1603. A study of the backgrounds of the English constitution; the Anglo Saxon contribution; the Norman conquest and development of governmental and legal institutions. (3) I (Cone)

131b – ENGLISH CONSTITUTIONAL HISTORY SINCE 1603. A continuation of 131a. The constitutional struggle between the Stuart kings and Parliament; triumph of constitutional monarchy; rise of the Cabinet; effect of the spread of democracy in recent times. (3) II (Cone)

134 – HISTORY OF CANADA. A brief survey of Canada under the French; increasing emphasis on the development of Canada under British con-

trol; evolution of the Dominion; relation with the United States and British Commonwealth of Nations.

Prerequisite: one year of college history.

(3) II (Cone)

135a — THE BRITISH EMPIRE TO 1860. Review of the various elements affecting Great Britain and its Empire between 1783 and 1860.

(3) I (Cone)

135b — THE BRITISH EMPIRE SINCE 1860. A continuation of 135a. Great Britain and the growth of the Dominions and the Commonwealth since 1860.

(3) II (Cone)

138 — BRITISH SOCIAL HISTORY DURING THE TUDOR PERIOD, 1485-1603. A study of British life, manners, and customs in town and country. Particular emphasis will be placed upon the age of Elizabeth, with political events subordinated to social changes. Lectures, discussion and reports.

(3) II (Cone)

139 — BRITISH HISTORY SINCE 1815. A detailed study of Britain's political, social, diplomatic and industrial development during the modern period. Special consideration will be given the part played by Britain in World War I and World War II and to her position in the contemporary world.

(3) I (Cone)

III. European History

110 — POLITICAL AND ECONOMIC HISTORY OF MEDIEVAL EUROPE. A study of the institutional development of medieval Europe. Special emphasis will be placed on those political, economic and constitutional aspects of the growth of medieval states.

(3) I (Staff)

111 — MEDIEVAL CIVILIZATION. A topical study of the main currents of medieval social and cultural life. The chief emphasis will be placed on the "High Middle Ages" of the twelfth and thirteenth centuries.

(3) II (Staff)

114 — THE RENAISSANCE AND REFORMATION. The course is designed for a study of the birth of modern spirit and institutions.

Prerequisite: History 8a or 4a.

(1) (McCloy)

119a — THE FRENCH REVOLUTION AND NAPOLEON. A study of the period 1789-1815 in Europe, treating of the appearance and manifestation of the spirit of revolt.

(3) II (McCloy)

119b — THE NINETEENTH CENTURY. Starting with the fall of Napoleon, this course treats the successive political changes in 1823, 1830, 1848 and 1871.

(3) II (Lunde, Kraehe)

120 — THE TWENTIETH CENTURY. A study of recent and contemporary movements, chiefly in Europe.

(3) I (Kraehe)

171 — EUROPE IN THE EIGHTEENTH CENTURY. The development of the absolute state with special emphasis on France under Louis XIV; the evolution of Russia and Prussia as new European powers.

Prerequisite: History 4a or its equivalent.

(3) II (Lunde)

Courses in the "200" Group

These courses are for graduate students. They are content courses presented by the lecture and discussion method and as such are distinct in character from the "300" group, which is concerned with problems and the practice of research.

202 — THE AMERICAN REVOLUTION. Seminar.
(3) II (Gilliam)

206 — THE CONFEDERATION OF THE U. S. (3) (Eaton)

247a-d — SEMINAR IN RECENT UNITED STATES HISTORY. Intensive studies in the political, social, and cultural history of the United States since 1914. Different topics will be stressed in rotation. (3) (Clark, Wall)

281 — AMERICAN HISTORIOGRAPHY. (3) I (Clark, England)

282 — HISTORICAL CRITICISM. (3) (Staff)

Courses in the "300" Group

SEMINARS — Basically research in character. These are not content courses. They provide special training in historical research (collection and critical analysis of bibliography, note-taking and organization of materials, and the presentation of a properly documented thesis). It is desirable that the student take the Senior Seminar before enrolling in "300" courses. Two class hours and 1 conference hour.

American Group

300a-d — SEMINAR IN AMERICAN FOREIGN DIPLOMACY.
(3) I (Vandenbosch)

315a-d — HENRY CLAY (AND HIS TIMES). (3) (Clark, Eaton)

342 — SEMINAR IN KENTUCKY HISTORY. The development of Kentucky as a Western commonwealth, with emphasis on economic and political phases from the 18th century to the present, with writing of papers based upon research among documents and other source materials. (3) (Clark)

365 — THE AMERICAN CIVIL WAR. (3) (Eaton, Kirwan)

366 — RECONSTRUCTION. (3) (Eaton, Kirwan)

European Group

320a-d — ORIGINS OF THE GREAT WAR. Seminar.
(3) II (Kraehe)

331 — SEMINAR IN MODERN BRITISH HISTORY.
(3) II (Cone)

350a-d — SEMINAR IN THE FRENCH REVOLUTION.
(3) (McCloy)

HISTORY OF EDUCATION (See Education)**LAW** (See Law)**MARKETS AND RURAL FINANCE** (See Agriculture)**PHILOSOPHY**

101a – **HISTORY OF PHILOSOPHY – ANCIENT AND MEDIEVAL.** A survey of the philosophical thought of ancient Greece and Rome, and of medieval Christendom. (3) I (DeBoer)

101b – **HISTORY OF PHILOSOPHY – MODERN.** A survey of modern European and American philosophy from the Renaissance to contemporary times. (3) II (Kuiper)

102 – **CONTEMPORARY PHILOSOPHY.** A study of contemporary philosophic tendencies, notably naturalism, empiricism, pragmatism, idealism, neoscholasticism, existentialism, and logical positivism. (3) I (Melzer)

106 – **REPRESENTATIVE MODERN PHILOSOPHERS.** A study in the original works of the chief figures in modern philosophy. Special attention will be given to Descartes, Spinoza, Locke, Hume, and Kant. (3) (Kuiper)

109a-d – **INDEPENDENT WORK.** Open only to students who have distinguished themselves in Philosophy or in allied subjects. (3 ea.) I, II, S (Staff)

115 – **INTERMEDIATE LOGIC.** A second course in logic including the logic of classes, of relations, of propositions and propositional functions, the theory of deductive systems; and a consideration of the rival schools of contemporary logical theory. (3) (Kuiper)

118 – **PLATO AND ARISTOTLE.** Plato's development of a theory of the world and of practice, studies in selected dialogues. Analysis of passages in Aristotle's major works on natural philosophy, metaphysics, knowledge, ethics, and politics. (3) (De Boer)

120 – **GREAT RELIGIONS.** A descriptive survey of several religions as they developed within their culture, for example: Hinduism, Buddhism, Confucianism, Judaism, Christianity. (3) (DeBoer)

125 – **PHILOSOPHY OF RELIGION.** A philosophical examination of religious ideas, including such topics as the origin of religion; the nature of religion; the various concepts of God, the soul, immortality; and internal and external criticisms of religion. (3) (Melzer)

130 – **METAPHYSICS.** Study of concepts and problems important for understanding the general or ultimate factors in reality; e.g. space-time, change, causality, substance, matter, life, God. (3) (DeBoer)

135 – **EPISTEMOLOGY.** A study of the origin, nature, kinds, and validity of knowledge, with a consideration of such topics as faith, intuition, belief, opinion, certainty, and probability. Also some discussion of recent developments in semantics. (3) (Melzer)

190 — PROBLEMS OF PHILOSOPHY. This course is designed for upper division and graduate students who have had little or no formal training in philosophy but wish to study the presuppositions underlying religion, education, art, morality, and government. (3) (Kuiper)

201a-h — SEMINAR IN PHILOSOPHY. One two-hour meeting a week for discussion of current developments in philosophy as found in books and periodicals. Readings and reports. (2) (Staff)

210a, b — TYPES OF LOGICAL THEORY. An intensive study of recent and contemporary contributions to logical theory: Whitehead and Russell, C. I. Lewis, R. Carnap, John Dewey, and others. (3) (Kuiper)

220a, b — RESEARCH IN PHILOSOPHY. This course is primarily intended for advanced students who desire and are prepared to do research in philosophy. (3) (Staff)

PHILOSOPHY OF EDUCATION (See Education)

POLITICAL SCIENCE

Graduates of accredited colleges may become candidates for a master's degree in political science. Students who are deficient in social science background must make up their deficiencies by taking such additional courses as may be recommended by the Department. At least one course each in Political Theory and Constitutional Development is required of every candidate. This requirement will be waived in the case of candidates who have had adequate undergraduate courses in these two fields. The graduate work must include at least three of the six fields of political science listed below. At least sixteen of the twenty-four semester hours required for the master's degree must be taken in political science. The remaining hours may be taken in one or more related fields upon approval of the major professor. Six semester hours of the work in political science must be in courses open only to graduate students.

Admission to candidacy for the doctor's degree in political science is governed by the regulations of the Graduate School, which requires a qualifying examination during the second year of graduate work. Of the total semester hours presented by the candidate at least twelve semester hours must be in courses not open to undergraduates. At the end of his course work the candidate must pass a preliminary written and oral examination in the following fields: Political Parties and Public Opinion, Public Administration, Theory, Comparative Government, Public Law and International Law and Diplomacy, with the exception in each case of the field in which the candidate writes his dissertation. A minor in a related field may be substituted for two of the six fields of political science, subject to the approval of the other department and of the candidate's committee. Candidates for the doctor's degree in a related department desiring a minor in political science must pass a preliminary examination in two of the six fields of political science. At least six semester hours of the work in political science must be in courses not open to undergraduates. Candidates for either a major or a minor in political science are expected to have a knowledge of the related social studies as a background for the work in political science.

Upon completion of the above requirements the candidate must take an oral examination covering primarily the dissertation and the field in which the dissertation falls.

I. Political Parties and Public Opinion

170 — POLITICAL PARTIES. An analysis of pressure groups and a discussion of the organization and functions of political parties in the United States.

(3) I (Shannon)

173 — PUBLIC OPINION. A study of the nature and function of public opinion together with an analysis of propaganda techniques and the role of the media of communication.

(3) II (Shannon)

179 — POLITICAL LEADERSHIP. Investigation and discussion of the relations between leaders and led in politics.

(3) II, S (Shannon)

Related Courses in other Departments

Psychology 104 — Social Psychology.

II. Public Administration

140 — RURAL LOCAL GOVERNMENT. A study of local government in rural America with particular emphasis upon county government.

(3) (Vanlandingham)

172 — KENTUCKY GOVERNMENT AND CONSTITUTION. An intensive study of government and administration in Kentucky. The course is intended primarily for teachers of civics in the secondary schools, and for teachers of government in colleges.

(3) II (Reeves)

177a — INTRODUCTION TO PUBLIC ADMINISTRATION. A study of theories of administration problems of line management and of staff and auxiliary functions, and the problem of administrative responsibility.

(3) I, S (Kammerer)

177b — PUBLIC PERSONNEL ADMINISTRATION. A survey of the concept of the merit system in public administration, recruitment, position classification, pay policies, employee relations and morale, tenure, promotion, transfer, and training in the public service.

(3) II (Kammerer)

177c — ADMINISTRATIVE REGULATION. The regulatory movement, legal bases of regulation, problems of administration of regulatory agencies, procedure in rulemaking and administrative adjudication, and judicial control.

(3) II (Kammerer)

Related Courses in other Departments

Economics 102 — Labor Problems.

Economics 104 — Public Finance.

Economics 124 — State and Local Taxation.

Economics 130 — Labor Legislation.

Law 153 — Taxation.

- Law 167 — Administrative Law.
 Social Work 100 — Public Welfare Administration.
 Sociology 112 — Community Organization.
 Social Work 151 — Public Assistance.

III. Theory

171a — EARLY POLITICAL THEORY. The political theories of Plato and Aristotle, and Roman Political Thought. Thomas Aquinas, Dante, Christian Political Thought. (3) I (Shannon)

171b — MODERN POLITICAL THEORY. Study of the writings of Machiavelli, Hobbes, Locke, Burke, Rousseau, Bentham, Mill and Marx. (3) II (Shannon)

175 — CONTEMPORARY AMERICAN POLITICAL THOUGHT. A study of American ideas of *laissez faire* and free enterprise; the new nationalism, the new freedom, the new deal, and current ideas of America's role in world affairs. (3) II, S (Shannon)

Related Courses in other Departments

Philosophy 101a, b — History of Philosophy.

IV. Comparative Government

155a — COMPARATIVE GOVERNMENT — PARLIAMENTARY DEMOCRACIES. A study of the governments of Great Britain and the Dominions, France, and Scandinavia. (3) I, S (Staff)

155b — COMPARATIVE GOVERNMENT — TOTALITARIAN STATES. A study of the totalitarian states of Europe and Asia. (3) II, S (Staff)

168 — THE GOVERNMENTS AND POLITICS OF EASTERN ASIA. An introductory study of the political institutions of China, Japan, the Philippines, India, and Indonesia. (3) I, S (Vandenbosch)

V. Public Law

159a — AMERICAN CONSTITUTIONAL DEVELOPMENT. Historical survey of the making of the constitution and its interpretation through principal statutes and judicial decisions down to 1870. (3) I, S (Trimble)

159b — AMERICAN CONSTITUTIONAL DEVELOPMENT. Continuation of the above survey from 1870 to the present. (3) II (Trimble)

176 — LEGISLATION. A functional study of legislative bodies and the process of legislation. Emphasis is placed on the organization of legislative assemblies, the operation of the committee system, the actual process of enactment, including the drafting of bills, and the external controls over legislation. (3) II (Kammerer or Reeves)

Related Courses in other Departments

- History 131a, b — English Constitutional History.
 Law 149 — Municipal Corporations.
 Law 161a, b — Constitutional Law I and II.

VI. International Law and Diplomacy

101 — LATIN AMERICAN RELATIONS. The relations between the United States and the Latin American countries, with emphasis on the Monroe Doctrine and Pan-Americanism. (3) II, S (Staff)

150 — INTERNATIONAL LAW. Sources and sanctions of international law, recognition, intervention, jurisdiction; nationality; protection of citizens abroad; diplomatic intercourse of states; treaties; and the treatment of aliens. (3) II (Vandenbosch)

160 — AMERICAN FOREIGN RELATIONS. An examination of the chief principles and problems of American policies, the control and conduct of American foreign relations. (3) I, S (Vandenbosch)

165 — WORLD POLITICS. A study of the most significant problems of world politics, including the fundamental factors governing international relations, and the conflicting interests in organizing world peace. (3) I, II, S (Vandenbosch)

166 — THE UNITED NATIONS. Background of the United Nations; functions and development of the chief organs and affiliated agencies; the Great Power Veto; problems; achievements. (3) II, S (Vandenbosch)

Related Courses in other Departments

Economics 127 — International Economic Policies.

History 100a, b — The Diplomacy and Foreign Policy of the United States.

History 120 — Europe in the Twentieth Century.

History 135a, b — The British Empire.

History 145 — Russia since 1900.

History 176 — France since 1870.

History 177 — Germany since 1870.

History 190a, b — The Far East.

Law 164 — Conflict of Laws.

202 — NATIONAL AND REGIONAL PLANNING. A survey of conditions leading to efforts at planning. A study of the theories and principles of planning; a detailed investigation of the regional life of selected areas. (3) II, S (Shannon)

204 — INTERNATIONAL RELATIONS AND ORGANIZATION. Social and economic factors leading to the establishment of international administrative organs, the International Labor Organization, the League of Nations; the United Nations and related organizations. (3) II (Vandenbosch)

206 — SPECIAL PROBLEMS IN PUBLIC ADMINISTRATION. A research course in selected problems of public administration. The problems will be selected in accordance with the needs and desires of students registered for the course. (3) I (Kammerer or Reeves)

211 — THE CONSTITUTION AND CIVIL RIGHTS. The American conception of civil rights as expounded by the Constitutional Fathers and as interpreted by the courts. The social implications of these rights. (3) I, S (Trimble)

213 — FEDERAL CENTRALIZATION. A study of the shifting of power and control from the states to the federal government as a result of the economic development of the country and the alteration of our constitutional system. (3) II (Trimble)

217 — CONTEMPORARY AMERICAN DIPLOMATIC PROBLEMS. An examination of the more important current problems of American foreign policy. (3) I, S (Vandenbosch)

271 — SEMINAR IN CONTEMPORARY POLITICAL THEORY. An intensive study of the nature of the contemporary ideologies of socialism, communism, syndicalism, pluralism, anarchism, fascism, political and social democracy. (3) I, S (Shannon)

500-1, 2, 3 — THESIS. (0) (Staff)

PSYCHOLOGY (See Biological Sciences)

RURAL SOCIOLOGY (See Agriculture)

SOCIAL WORK

Courses in Social Work listed below may be taken for graduate credit. Major programs of study in this field leading to advanced degrees are not offered at the present time.

100 — PUBLIC WELFARE ADMINISTRATION. Philosophy, background, and methods of tax-supported social work. The inter-relationship of federal, state and local services; standards and supervision as influenced by federal security legislation.

Prerequisite: two courses in social work. (3) II (Wetzel)

105 — CHILD WELFARE SERVICES. A study of community and national programs for child care and protection, including aid to dependent children and other social security services. (3) I, S (Wetzel)

110 — PSYCHIATRIC INFORMATION FOR SOCIAL WORKERS. An analysis of personality development and behavior patterns with special reference to psychiatric interpretation and their implication for social case work. For majors in the department.

Prerequisite: two courses in social work. (2) I (Gail)

111a-d — INDEPENDENT WORK. Conferences, assigned readings, reports on minor research problems. Open to majors in the department by special permission. (1 ea.) I, II, S (Staff)

113 — INTRODUCTION TO SOCIAL CASE WORK I. An introductory course in the generic principles of social case work. Discussion based on selected readings and case records. For majors in the department.

Prerequisite: two courses in social work. (2) II (Theobald)

116 — SOCIAL WORK RESEARCH AND STATISTICS. A consideration of statistical and other types of research in social work problems with illustrations drawn from current studies of government and private welfare agencies.

Prerequisite: two courses in social work. (3) I (Wetzel)

122 — FIELD OF SOCIAL WORK. Function, method, and philosophy of contemporary social work. The divisions of the field (case work, group work, community organization) and the professional status of social work will be considered.

(3) I, II, S (Staff)

130a — COMMUNITY ORGANIZATION FOR SOCIAL WELFARE. Methods and techniques of social welfare planning. Analysis of needs and resources, coordination of agencies, financing and developing chest and council programs, and the interpretation of social work.

(3) I, S

130b — COMMUNITY ORGANIZATION FOR SOCIAL WELFARE. A continuation of 130a with special emphasis on the organization and function of national and international welfare agencies.

Prerequisite: S.W. 130a or permission of instructor.

(3) II

131 — FIELD PRACTICE IN COMMUNITY ORGANIZATION. Supervised work in planning and execution of simple projects in community organization.

(2) I, II (Staff)

140a — PRINCIPLES OF SOCIAL GROUP WORK. A critical study of the theories and practices of social group work with reference to the work of public and private agencies in this field.

(3) I, S

140b — ADMINISTRATION AND SUPERVISION OF GROUP WORK AGENCY PROGRAMS. The group work process as applied to agency administration, supervision of staff and volunteers, statistical and process recording, evaluation of program, personnel and committee relationships in the group work field.

Prerequisite: S.W. 140a or permission of instructor.

(3) II

144a, b — FIELD PARTICIPATION IN GROUP WORK PROGRAMS. Supervised experience in the practice of group work in connection with a program in a local work agency. For senior majors specializing in group work.

Prerequisites: S.W. 140a and permission of instructor.

(2) I, II, S

151 — PUBLIC ASSISTANCE PROGRAMS. A study of the current function of public assistance upon the federal, state, and local levels with emphasis on the public assistance provisions of the Social Security Act, general relief, and work relief policies.

Prerequisite (or to be taken concurrently): S.W. 122.

217 — GENERIC SOCIAL CASE WORK. An introductory course for graduate students with emphasis upon the application of case work in problems of increasing complexity.

Prerequisite: S.W. 113, or special permission.

(2) II (Theobald)

220a — SUPERVISED FIELD WORK. 150 clock hours of supervised field work in a public or a private agency.

(2) I, II

221 — ADVANCED SOCIAL CASE WORK I. An advanced course built around the theoretical aspects of case work problems encountered by the students in their field work, and supplemented by cases presenting other problems.

(2) II

225 — SOCIAL INSURANCE. A study of social insurance in Europe and the United States. Emphasis will be given to the problems in administration, financing, and coverage.

(2) II (Wetzel)

SOCIOLOGY

The following advanced degrees with major work in sociology are available: Master of Arts, Master of Science, Master of Science in Agriculture, and Doctor of Philosophy.

The University of Kentucky has two departments concerned with sociology: the Department of Sociology in the College of Arts and Sciences and the Department of Rural Sociology in the College of Agriculture and Home Economics. However, a coordinated program of graduate instruction in sociology is offered jointly by the staffs in Sociology and Rural Sociology and one of the senior staff members is Chairman of Graduate Study. Under this plan a graduate student wishing to apply for a degree in sociology is assigned an adviser from the Rural Sociology Department or the Sociology Department, according to his field of interest.

In addition to resident teaching, the staffs of both departments are engaged in various research and consultative activities through which the student's graduate experience is enriched, both indirectly and directly.

The Department of Sociology operates a Social Research Consultation Service which offers to the people of the state professional assistance in meeting community problems. A part of the Consultation Service is the Bureau of Community Service which provides research opportunities for graduate students interested in community analysis and development.

The Department of Rural Sociology participates in three related, though separate, parts of the University: (1) as a part of the College of Agriculture and Home Economics and of the Graduate School, it offers both undergraduate and graduate courses, (2) as a part of the Agricultural Experiment Station it carries on research in rural sociology, and (3) as a part of the Extension Service it is involved in applying the results of sociological research to the problems of rural people of the state.

101 — SOCIAL DEPENDENCY. A study of poverty and social dependence and of measures for their alleviation and reduction, with special attention to present private and public activities in this direction, including social insurance. (3) I

102 — SOCIAL PATHOLOGY. A systematic examination of the various types of social disorganization, with particular emphasis upon the sociological explanation of underlying factors.
Prerequisite: one sociology course. (3) II (Sanders)

103 — CRIMINOLOGY. A study of general conditions as to crime and delinquency, of measures of punishment and reform of offenders, of criminal procedure and its possible reform, and of measures for the prevention of crime. (3) I, II, S

104 — SOCIAL PSYCHOLOGY. (Same as Psychology 104) Description and explanation of social phenomena in terms of the original and acquired reaction systems of the individual. Topics given special attention: crowds, mob behavior, propaganda, and nationalism.
Prerequisite: Psychology 1a, b. (3) I, II, S (White)

105 — SOCIAL THEORY: PLATO TO COMTE. The social theories of representative social thinkers, together with a brief study of their lives and the time in which they lived. Extensive reading of their works.
Prerequisite: one sociology course. (3) I (Sanders)

109a — THE FAMILY. A study of the institutions of marriage and the family and an analysis of the various factors and forces at work in our time which are affecting the individual marital relationship.

Prerequisite: two sociology courses.

(3) I, II, S (Gladden)

109b — THE FAMILY. A study of the various social situations in which children grow to early adolescence with emphasis on the primary group relationships in home, neighborhood, play group, and school.

Prerequisite: Sociology 109a or permission of instructor.

(3) II, S (Gladden)

114a-d — INDEPENDENT WORK. Study of some special topic by duly authorized students. For sociology majors only.

(1 ea.) I, II, S (Staff)

121 — POPULATION PROBLEMS. A study of movements and trends in population, with respect to race, age, birth-rates, etc.

Prerequisite: Sociology 124 or its equivalent.

(3) I (Sanders)

122 — CONTEMPORARY SOCIOLOGICAL THEORY. A study of the leading developments in sociological theory and methodology from Comte to the present time.

Prerequisite: two sociology courses.

(3) II (Anderson)

124 — TECHNIQUES OF SOCIAL INVESTIGATION. A study of the practical applications of sociology in organizing, conducting, and interpreting social surveys and other forms of sociological research.

Prerequisite: one sociology course.

(3) I

126 — INDUSTRIAL SOCIOLOGY. A sociological analysis of the division of labor, the characteristics of occupational groupings; principal socio-economic movements, and group relationships in modern industry.

Prerequisites: one sociology and one economics course.

(3) I (Gladden)

127 — SOCIAL CLASSES. A systematic treatment of the factors underlying differentiation and stratification, with particular attention to caste and class; social mobility in American society.

Prerequisite: one sociology course.

(3) I (Anderson)

128 — HUMAN RESOURCES OF THE SOUTH. Analysis of the population and social organization of the south and of the factors influencing the development and utilization of the human resources of the region.

Prerequisite: senior standing of social science majors; others by arrangement.

(3) II, S (Anderson)

130 — SOCIAL SYSTEMS. A study of the different social systems, including experimental communities that have been proposed or attempted in human society from the earliest times to the present.

(3) S

164 — THE BALKANS: THE STUDY OF A PEASANT SOCIETY. A description of the basic social structure of the Balkan region and an analysis of the social changes occurring in the peasant way of life. Countries covered are Albania, Bulgaria, Greece, Rumania, and Yugoslavia.

(3) II, S (Sanders)

170 — THE CITY. This course is a study of the sociology of city life. The major emphasis is upon the ecological and social characteristics of urban life in contrast to rural community life.

Prerequisite: an introductory sociology course or with approval of instructor.

(3) II (Sanders)

201a, b – SOCIOLOGY SEMINAR. Consideration mainly of methods of research and of current sociological literature. (2 ea.) I, II, S (Staff)

205a, b – SEMINAR IN SOCIAL PSYCHOLOGY. (Same as Psychology 205a-b) Each semester some topic in the field of social psychology, such as attitudes and beliefs, structure and function of social groups, social determinants of behavior, leadership, and morale will be studied intensively. (3 ea.) II (White)

209 – SEMINAR IN THE FAMILY. A seminar for advanced students interested in family research, family counseling, or dealing with family relationships in some other professional capacity. (2) II (Gladden)

224 – MINORITY GROUPS. A sociological scheme of analysis is applied to the special problems of adjustment arising from ethnic group relations and culture contacts. (3) I

225 – SYSTEMATIC SOCIOLOGY. An intensive study of certain selected sociological theorists such as Weber, Durkheim, Simmel, Pareto, and others. (3) I (Sanders)

230 – EDUCATIONAL SOCIOLOGY. (Same as Education 230.) A course in the sociological foundations of education. (3) II, S (Hartford)

RURAL SOCIOLOGY

115 – ORGANIZATION OF RURAL GROUPS. (3) II, S (Brown)

125 – RURAL MOVEMENTS AND SOCIAL POLICY. (3) I

160 – RURAL COMMUNITY ANALYSIS. (3) I, II (Bauder)

180 – ADVANCED RURAL SOCIOLOGY. (3) I, S

190a-c – SPECIAL PROBLEMS IN RURAL LIFE. (2) I, II (Staff)

200a-c – RESEARCH IN RURAL SOCIOLOGY. (2) I, II, S (Staff)

210 – SEMINAR IN RURAL ORGANIZATION. (3) I (Beers)

220 – SEMINAR IN RURAL ATTITUDES. (3) II (Bauder)

230 – RURAL URBAN RELATIONS. (3) I

250a, b – TOPICAL SEMINAR. (3) II (Staff)

III. BIOLOGICAL SCIENCES

AGRONOMY (See Agriculture)

ANATOMY AND PHYSIOLOGY

103a-d — INDEPENDENT WORK IN ANATOMY. The pursuit of some advanced problems in anatomy under the direct supervision of the instructor. Discussion period, one hour; laboratory, four hours.

Prerequisite: A. & P. 10 or the equivalent. (3 ea.) I, II, S (Staff)

104a-d — INDEPENDENT WORK IN PHYSIOLOGY. A study of some advanced problem in physiology under the direct supervision of the instructor. Discussion period, one hour; laboratory, four hours.

Prerequisites: A. & P. 10 or the equivalent; (3 ea.) I, II, S (Staff)
Chemistry 1a, b.

105 — ARCHITECTURE OF THE HUMAN SKELETON. Each bone is studied in detail with respect to its architecture, function, joint combination, and muscular relations. Lectures, two hours; laboratory, four hours.

Prerequisite: Junior standing. (4) II, S (Allen)

106 — INTRODUCTION TO ENDOCRINOLOGY. The endocrine glands' general development, anatomical location, structure, and fundamental functions are studied. Lectures, three hours.

Prerequisites: A. & P. 10; *Zoology 7b*; (3) I, S (Allen, Archdeacon)
Chemistry 1a, b.

107 — COMPARATIVE NEURO-PHYSIOLOGY. A comparative study of Anatomy and Physiology of human nervous system with the lower animals'. Lectures, two hours; laboratory, four hours.

Prerequisite: A. & P. 10. (4) II (Allen)

108 — CIRCULATION, RESPIRATION AND METABOLISM. The chemical and physical phenomena of respiration, circulation, and metabolic phases are emphasized. Lectures, two hours; laboratory, two hours.

Prerequisite: A. & P. 10 (3) II, S (Archdeacon)

109 — CELLULAR PHYSIOLOGY. An intensive study of general physiological principles with special emphasis on chemical and physical aspects of the cell. Lectures, two hours; laboratory, two hours.

Prerequisites: A. & P. 10; *physics, and* (3) II, S (Boyarsky)
general chemistry.

110 — INTERMEDIATE METABOLISM. Oxidation-reduction enzyme systems and intermediate metabolic phenomena are considered. Lectures, two hours; laboratory, two hours.

Prerequisites: A. & P. 10, *physics and organic* (3) I (Archdeacon)
chemistry.

201a-i — RESEARCH IN PHYSIOLOGY. An assigned problem, in which originality must be shown, is pursued. Conference and laboratory six hours.

Prerequisites: A. & P. 10; *Chemistry 130a, 6;* (3 ea.) I, II, S (Allen,
physical chemistry desirable; physics, Archdeacon, Boyarsky)
one year.

202 — **PHYSIOLOGICAL TECHNIQUES.** Operational procedures are undertaken in gastrointestinal, hemodynamic, and respiratory systems. Lecture, one hour; laboratory, two hours.

Prerequisite: A. & P. 10 or equivalent.

(2) I, II (Archdeacon)

203 — **EXPERIMENTAL ENDOCRINOLOGY.** Abnormalities of various endocrine glands are produced experimentally and results thoroughly reported. Lecture, one hour; laboratory, two hours.

Prerequisite: A. & P. 106.

(2) I, II (Allen)

204a-i — **GRADUATE SEMINAR IN ANATOMY AND PHYSIOLOGY.** Required of all graduate students. Discussion period, one hour.

(1) I, II (Staff)

205 — **ADVANCED NEURO-PHYSIOLOGY.** Electrical analyses of nerve fibres and synapse are considered along with nerve impulse theories, reflexes, and metabolism. Lectures, two hours; laboratory, two hours.

Prerequisites: A. & P. 107, 109.

(3) II (Boyarsky)

ANIMAL INDUSTRY (See Agriculture)

ANIMAL PATHOLOGY (See Agriculture)

ANTHROPOLOGY (See Social Sciences)

BACTERIOLOGY

102 — **GENERAL BACTERIOLOGY.** Microorganisms; their morphology, classification, physiology, relation to certain fermentations, to food, to soil fertility, and to disease. Lecture and recitation, 2 hours; laboratory, 4 hours.

Prerequisite: Chem. 1b. (4) I, II, S (Scherago or Hotchkiss and others)

103 — **PATHOGENIC BACTERIOLOGY.** Human and animal pathogenic microorganisms, especially their morphological, cultural, and pathogenic properties. Lecture, 2 hours; laboratory, 4 hours.

Prerequisites: Bact. 102 or 52;

or 2b and Chem. 1b.

(4) I, S (Scherago, Humphries, and Edwards)

104 — **APPLIED BACTERIOLOGY.** A course in bacteriological analysis to supplement Courses 52 and 102. Laboratory, 4 hours.

Prerequisites: Bact. 102 or 52;

or 2b and Chem. 1b.

(2) I, II, S (Hotchkiss and others)

110a — **LABORATORY DIAGNOSIS.** Laboratory methods employed in diagnostic and public health laboratories. Designed primarily for medical technology students. Examination of sputum, urine, and blood. Lab., 6 hours.

Prerequisite (or to be taken concurrently): Bact. 103. (3) I, S (Hotchkiss)

110b — **LABORATORY DIAGNOSIS.** Continuation of 110. Examination of blood continued. Laboratory diagnosis of parasitism and infectious diseases. Lab., 6 hours.

Prerequisite (or to be taken concurrently): Bact. 103. (3) II, S (Hotchkiss)

111 — **GENERAL PATHOLOGY.** Effects of disease will be studied at autopsies and by the examination of fresh and museum specimens and histological sections. Lect., 2 hours; Lab., 4 hours.

Prerequisites: Anat. and Physiol. 10;

Zool. 7b, 101b, and 106; Bact. 103.

(4) I, S (Maxwell, Scherago, and Hotchkiss)

115a-f — INDEPENDENT WORK. Students will be assigned special problems in laboratory work and reference reading. Lab., 6 hours.
Prerequisites: any bacteriology course above 2b. (3 ea.) I, II, S (Staff)

120a, b — HOSPITAL LABORATORY PRACTICE. Students will be required to carry out, under supervision, the laboratory work in one of the hospitals in Lexington. Lab., 12 hours, and 18 hours, respectively.
Prerequisites: Bact. 110a, b.

(4, 6) I, II, S (Maxwell, Harrison, and others)

125 — IMMUNOLOGY AND SEROLOGY. The theories and mechanism of infection and immunity; preparation, standardization, and uses of biological products; serology. Lect., 2 hours; lab., 6 hours.
Prerequisite: Bact. 103.

(5) II, S (Scherago, Humphries, and Edwards)

201a-j — RESEARCH IN BACTERIOLOGY. Laboratory, 10 hours.
(5 ea.) I, II, S (Senior Staff)

203a — PUBLIC HEALTH BACTERIOLOGY. Public health aspects of bacteriology including the etiology, epidemiology, immunology, and lab. diagnosis of infectious and health officers or those with equivalent training.
(3 ea.) I, S (Scherago and others)

203b — PUBLIC HEALTH BACTERIOLOGY. Continuation of 203a. Lectures and recitations, 1 hour; laboratory, 4 hours.
Prerequisite: Bact. 203a. (3) II, (Scherago and others)

206 — BACTERIOLOGY OF FOODS. Dairy and miscellaneous food products; food preservation; food poisoning. Standard methods for official food and public health laboratories. Lect., 2 hours; lab., 4 hours.
Prerequisites: Bact. 102 or 52; or 2 b and Chem. 1b. (4) I, S (Weaver and Hardin)

207 — BACTERIOLOGY OF WATER AND SEWAGE. Microbiology of water; methods of purification. Sewage disposal methods. Operation of swimming pools. Standard and other methods for examination. Lect., 2 hours; lab., 4 hours.
Prerequisites: Bact. 102 or 52; or 2b and Chem. 1b. (4) II, S (Weaver and Hardin)

210 — CLINICAL MYCOLOGY. Methods and techniques for isolating and propagating pathogenic actinomycetes and fungi. Lab. diagnosis of fungous infections. Lab., 4 hours a week.
Prerequisites: Chem. 130b; reading knowledge of one foreign language; Bact. 125. (2) I, S (Hotchkiss)

220 — HISTORY OF BACTERIOLOGY. Conferences, 2 hours.
Prerequisite: Bact. 125. (2) II, S (Weaver)

222 — ADVANCED GENERAL BACTERIOLOGY. Bacterial cytology; theories of staining. Microbial genetics. Taxonomy and nomenclature. Lectures and conferences, 2 hours; Lab., 4 hours.
Prerequisites: Bact. 125 and Chem. 130. (4) I, S (Weaver)

224 — DISINFECTANTS AND ANTIBIOTICS. Chemical agents injurious to microorganisms. Practical applications and methods of testing. Conferences, 1 hour; Lab., 4 hours.

Prerequisites: Bact. 2b, or 52 and 104; Chem. 130b. (3) II, S (Hotchkiss)

226a — METABOLISM OF MICROORGANISMS. Chemical changes produced by microorganisms; properties of their enzymes; the physiology of their growth. Lectures or conferences, 2 hours; lab., 4 hours.

Prerequisites: Chem. 130b; reading knowledge of German or French. (4) I (Hardin)

226b — METABOLISM OF MICROORGANISMS. Continuation of 226a. Lectures or conferences, 2 hours; lab., 4 hours.

Prerequisite: Bact. 226a. (4) II (Hardin)

235 — IMMUNOCHEMISTRY AND ADVANCED IMMUNOLOGY. Chemistry of antigens and antibodies; of the reaction between them in vitro and in vivo; immune and hypersensitive reactions. Lect. and conferences, 2 hours; lab., 4 hours.

Prerequisite: Bact. 125; Chem. 130b and 143b. (4) II, S (Scherago or Humphries)

250a-j — SEMINAR. Review of current literature in bact.; presentation of papers on work in progress in the department or on assigned topics; reports on meetings of national bacteriological societies. Required of all graduate students. 2 hours.

(1 ea.) I, II (Staff)

270 — ELECTRON MICROSCOPY. Theory, operation and uses of the magnetic electron microscope and the vacuum unit for metal shadow casting. Lect., 1 hour; lab., 4 hours.

Prerequisites: Physics 3a, b. (3) I, S (Edwards)

272 — VIRUSES AND RICKETTSIAE. Natures, activities, and methods of laboratory cultivation of viruses and rickettsiae; their relation to bacteria, plants, and animals. Lect., 2 hours; lab., 4 hours.

Prerequisite: Bact. 125. (4) II, S (Edwards)

BOTANY

103a — PLANT PHYSIOLOGY. Basic chemical and physical principles of plant physiology. Water relations of plants including internal movement, transpiration, and absorption. Two lectures and two two-hour laboratory periods per week.

Prerequisite: 6 credits of botany. (4) I (Henrickson)

103b — PLANT PHYSIOLOGY. A continuation of 103a, covering the chemical processes and organic materials. Photosynthesis; synthesis and digestion of food; respiration; growth.

Prerequisite: Botany 103a or equivalent. (4) II (Henrickson)

106a-c — SPECIAL PROBLEMS. Independent work in some phase of advanced Botany.

Prerequisite: 18 credits of courses in botany not open to freshman. (3 ea.) I, II (Staff)

107 — MORPHOLOGY OF ALGAE. The economic value of algae and the structure and life histories of representative forms of the various groups. Three two-hour laboratory periods per week.

Prerequisite: 6 credits of botany.

(3) I (McInteer)

114 — ECOLOGY. The relationships existing between plants and their various factors of environment. Three lectures and one two-hour laboratory period per week.

Prerequisite: 6 credits of botany.

(4) II (McInteer)

115a, b — SEMINAR. Readings and reports on special topics. Required of all senior botany majors.

(1 ea.) I, II (Staff)

125a — MORPHOLOGY OF THE FUNGI. Structure, method of reproduction of the Myxomycetes, Phycomycetes and the simpler Ascomycetes. Two lectures and two two-hour laboratory periods per week.

Prerequisite: Botany 2 or its equivalent.

(4) I (McFarland)

125b — MORPHOLOGY OF THE FUNGI. A continuation of Botany 125a. The remainder of the Ascomycetes, the Basidiomycetes, and the Fungi Imperfecti. Two lectures and two two-hour laboratory periods per week.

Prerequisite: Botany 125a.

(4) II (McFarland)

130 — INTRODUCTION TO HEREDITY. This course is similar to Botany 30, except that extra work will be required for graduate credit. Credit will not be given for both 30 and 130.

Prerequisite: 4 credits of biological sciences.

(3) I, II, S (Riley)

132 — GENES AND THEIR ACTION. The nature, and action, of genes. Physiological genetics. Three lectures per week.

Prerequisite: Botany 30 or 130 or equivalent.

(3) II (Riley)

134 — CYTOGENETICS. Chromosome aberrations and their importance in heredity and evolution. Three lectures and one two-hour laboratory period per week.

Prerequisite: Botany 30 or equivalent.

(4) I (Riley)

135 — PLANT CYTOTAXONOMY. Cytogenetic, geographical, ecological, and other factors that have influenced the origin and development of species of plants. Three lectures per week.

Prerequisites: Botany 15 and 134 or equivalents.

(3) II (Riley)

150a — ADVANCED SYSTEMATIC BOTANY. Qualified students will study assigned family groups from the standpoint of relationships. A detailed study of keys and various systems of Taxonomy. One lecture and two two-hour laboratory periods per week.

Prerequisite: Botany 15.

(3) I (McFarland)

150b — ADVANCED SYSTEMATIC BOTANY. A continuation of Botany 150a. One lecture and two two-hour laboratory periods per week.

Prerequisite: Botany 150a.

(3) II (McFarland)

160 — PLANT MICROTECHNIQUE. The principal methods used in the preparation of permanent slides for the compound microscope. Not open to students who have had Botany 6. Three three-hour laboratory periods per week.

Prerequisite: 6 credits of botany.

(3) II (McFarland)

206a, b — RESEARCH IN PLANT MORPHOLOGY. Graduate students prepared for independent work will be assigned to investigations in anatomy, histology, or special morphology of plants. (4 ea.) (McFarland)

207a, b — RESEARCH IN MYCOLOGY. Those desiring to carry on investigations in mycology should have had Botany 125b or the equivalent. Suitable work will be suggested to students desiring to enter this field. (4 ea.) (McFarland)

210a, b — RESEARCH IN PLANT PHYSIOLOGY. Graduate students with adequate preparation in plant physiology, physics, and chemistry may carry on independent investigations in plant physiology. (4 ea.) (Henrickson)

213a, b — RESEARCH IN SYSTEMATIC BOTANY. Graduate students may carry on independent work that may be used in the preparation of their thesis.

Prerequisite: Botany 150b. (4 ea.) (McFarland)

215a, b — RESEARCH IN CYTOGENETICS. Independent investigations in cytogenetics. In connection with his investigations, the student will be expected to master the literature and present a report. (4 ea.) (Riley)

500-1, 2, 3 — THESIS. (0) (Staff)

ENTOMOLOGY (See Agriculture)

HORTICULTURE (See Agriculture)

HYGIENE AND PUBLIC HEALTH

100a — PUBLIC HEALTH. A consideration of the cause, prevalence, transmission and control of preventable diseases. (3) I, S (Hamilton)

100b — PUBLIC HEALTH. A continuation of 100a. Environmental and organization approach to disease prevention. (3) II, S (Heinz)

104 — MATERNAL AND CHILD HEALTH. Problems in maternal and child health. (2) II, S (Heinz)

110 — HEALTH EDUCATION. A course dealing with principles of health education. (3) II, S (Heinz)

111a-d — INDEPENDENT WORK IN HYGIENE AND PUBLIC HEALTH. (3) I, II, S (Heinz)

115 — COMMUNICABLE DISEASES. A study of communicable diseases with reference to causal agents, transmission, and their methods of prevention and control. (3) II, S (Hamilton)

118 — VITAL STATISTICS. Statistics of population, deaths, births and morbidity; the collection and analysis of vital statistics. (3) I, S (Heinz)

120a — MENTAL HYGIENE. An introduction to mental hygiene including a consideration of the cause, treatment and prevention of mental disorders. (3) I, S

122 — SCHOOL AND COMMUNITY HEALTH. To develop an idea of the cooperative nature of school health work and the importance of connecting it with adult work in the community. (2) I, S (Heinz)

150a, b — PROBLEMS IN HEALTH EDUCATION. An individual problems course for students and teachers in service, based upon a systematic attack upon the health problems of a school. (2) II, S (Heinz)

PHARMACY (See Biological Sciences)

PSYCHOLOGY

The Department of Psychology offers graduate training in clinical psychology, in industrial psychology, and in general and experimental psychology.

In cooperation with the Veterans Administration, the Department of Psychology has set up a program of training in clinical psychology of four years duration leading to the degree of Doctor of Philosophy. The students who are being trained in this program are appointed as part-time psychological interns at the local Veterans Administration Hospital. The training program is described in Technical Bulletin 10A-146 of the Veterans Administration. Prospective applicants for internships should write to the Head of the Department.

Practical experience through contact with actual cases of psychoses, psychoneuroses, mental deficiency, maladjustments in children and adults, and other behavior problems is available in several nearby institutions.

The Department is affiliated with the University Personnel Office. The records of scores obtained by students on various tests of intelligence, aptitudes, and achievement are available to graduate students who wish to do research on problems of student personnel.

The Department cooperates in the operation of the Child Guidance Service.

The Department offers to industries and business establishments an industrial psychological service, which includes various forms of testing, personnel surveys, selection devices, and advice on miscellaneous problems of personnel. Students who are interested in industrial personnel work have opportunities to obtain practical experience and to do research in this field leading to the doctorate.

A laboratory for the study of animal behavior is provided and equipped for research and class work on white rats and other lower animals.

A clinic for the correction of speech disorders, such as stuttering and retarded speech development, is operated by the Department of Psychology. The services of this clinic are available to university students, students and teachers in public schools, and to other interested persons.

104 — SOCIAL PSYCHOLOGY. Description and explanation of social phenomena in terms of the original and acquired reaction systems of the individual. Topics given special consideration: crowds, mob behavior, propaganda, and nationalism.

Prerequisite: Psychology 1.

(3) I, II (White)

105 — EMPLOYMENT PSYCHOLOGY. Emphasis is placed on the characteristics of an effective interview, the application blank, the use of objective tests in selection and the relation of adjustment, interests, special abilities, and experience to job fitness.

Prerequisite: Psychology 8 or equivalent.

(3) II (Mellenbruch)

106 — INDUSTRIAL PSYCHOLOGY. Applications of psychology to industrial personnel problems: training, merit ratings, industrial fatigue, surveys of attitudes, morals, turnover and absenteeism, safety promotion, providing incentives, welfare provisions, etc.

Prerequisite: Psychology 1 or equivalent.

(3) II (Mellenbruch)

108 — EXPERIMENTAL PSYCHOLOGY. An experimental study of the nature and perception of the process by which we know the world through our senses: vision; hearing; taste and smell; the skin senses.

Prerequisite: Psychology 1.

(4) I (Meyers)

113 — PSYCHOLOGY OF LEARNING. An experimental study of the learning process with an analysis of various types of learning — verbal learning, form learning, conditioned response learning, acquisition of skills, memory, problem solving, and thinking.

Prerequisite: Psychology 1.

(4) II (Calvin)

114 — ABNORMAL PSYCHOLOGY. Disturbed conduct and thinking studied from both the theoretical and the practical points of view. The major psychoses and neuroses are given special consideration. Some opportunity for clinical observation.

Prerequisite: Psychology 1.

(3) I, II (Pattie)

115 — GENETIC PSYCHOLOGY. Influence of hereditary factors in the development of human behavior. A critical survey of the evidence regarding psychological traits such as musical and other special abilities, intelligence, and interests.

Prerequisite: Psychology 1.

(3) I (Newbury)

116 — ANIMAL BEHAVIOR. Experimental techniques used in investigations of animal behavior. Topics include: heredity and environment, activity, instinct, motivation, learning, sensory discrimination, and personality in sub-human species.

Prerequisite: Psychology 1.

(4) II (Newbury)

117 — BIOLOGY OF MOTIVATION. Fundamental activating and goal-seeking processes of living organisms, biologically considered, including experimental and theoretical studies on such topics as instincts, drives, motives, appetites, and taste preferences.

Prerequisite: Psychology 1.

(2) S (Newbury)

120a-d — INDEPENDENT WORK IN PSYCHOLOGY. Designed for advanced students and graduates who undertake minor research problems to be conducted in regular consultation with the instructor.

Prerequisite: major in the Department with a standing of 2.0 in psychology courses.

(2 ea.) I, II, S (Staff)

121 — STUDENT PERSONNEL. The methods of dealing with student personnel problems in college and high school, including the problems of selection, classification, grading, personal adjustment, motivation, guidance, and vocational placement.

Prerequisite: Psychology 1.

(3) I (Martin)

124 — MENTAL HYGIENE. A general orientation to the subject of mental hygiene, its historical development, its scope and relation to various sciences. The individual and cultural determinants of behavior will be discussed.

Prerequisite: Psychology 1.

(3) I (Bills)

125 — EXPERIMENTAL CHILD STUDY. An advanced course in the psychology of the normal child. The scientific background of experimental and observational method. Opportunities are provided to work with children.
Prerequisite: Psychology 7.

(3) II

130 — SPEECH CORRECTION: A SURVEY. The nature, causes, and treatment of the major disorders of speech: defective articulation and voice, aphasia, and stuttering. A limited amount of clinical practice may be obtained by some of the more advanced students.

*Prerequisite: 9 semester credits of**psychology or educational psychology.*

(3) I, II (Diehl)

131 — STUTTERING AND ITS CORRECTION. A practicum course in therapy for all types of speech disorders.

*Prerequisite (or to be taken concurrently):**Psychology 130.*

(3) I, II (Diehl)

150 — PSYCHOLOGICAL TESTING. A general orientation to the field of psychological testing. Introduction to the principles and methods of psychological testing and a survey of the various kinds of psychological tests.

Prerequisites: Psychology 1, 8.

(3) I, II (Glaser)

201a — SEMINAR IN PSYCHOLOGY. One two-hour discussion each week of a research problem under investigation by a graduate student or staff member.

(1) I, II (Staff)

201b, c, etc. — SEMINAR IN PSYCHOLOGY. Continuation of 201a. These numbers are provided for registration in succeeding semesters.

(1) I, II (Staff)

203a — PROBLEMS IN PSYCHOLOGY. Shorter research problems are registered under this number. A minimum of six hours per week is required in consultation with the instructor.

(2) I, II, S (Staff)

203b, c, etc. — PROBLEMS IN PSYCHOLOGY. Continuation of research. These numbers are provided for registration in subsequent semesters.

(2) I, II, S (Staff)

205a, b — SEMINAR IN SOCIAL PSYCHOLOGY. Each semester some topic in the field of social psychology such as attitudes and beliefs, structure and function of social groups, social determinants of behavior, leadership, and morale will be studied intensively.

(3) I, II (White)

210a — RESEARCH IN PSYCHOLOGY. Research or thesis work may be registered under this number. A minimum of nine hours a week is required on research conducted in consultation with the instructor.

(3) I, II, III (Staff)

210b, c, etc. — RESEARCH IN PSYCHOLOGY. Continuation of research. These numbers are provided for registration in succeeding semesters.

(3) I, II, III (Staff)

211 — MENTAL WORK AND FATIGUE. A laboratory course. Two hours devoted to experiments and two hours discussion each week.

*Prerequisites: an advanced course in**experimental psychology and elementary statistics, or equivalent.*

(3) I (Calvin)

212 — THE EMOTIONS. An experimental study of feeling and emotion. The following aspects of emotional behavior are considered: the conscious experience of emotion; behavior in emotional situations; physiological changes accompanying emotion.

Prerequisite: Psychology 108 or equivalent.

(3) II (Griffith)

214 — THEORIES OF LEARNING. An examination of theories which attempts to explain the processes of learning and memory. The principal types of theories examined are the behavior theories and the field theories.

Prerequisite: Psychology 113 or equivalent.

(3) II (Calvin)

215 — PSYCHOMETRICS. Analysis and interpretation of human measurements. The course deals with the computation and interpretation of simple, partial, and multiple correlations, regression equations, and reliability of measures.

Prerequisite: Mathematics 4 or equivalent.

(3) I, II (Glaser)

217 — PSYCHOLOGY OF LANGUAGE. A survey of semantic uses of languages as related to human behavior. Special attention will be given to language problems of brain injured: aphasic, cerebral palsied, and mentally disordered.

(2) II (Diehl)

219 — CLINICAL PSYCHOLOGY. A survey of clinical work on the diagnosis and adjustment of problem children and adults. The course gives practical training and experience with representative cases.

(4) I, II, S (Roseman)

222 — SYSTEMS OF PSYCHOLOGY AND THEIR HISTORY. A survey of the history of psychology and an intensive study of current systems of psychology.

(3) I (Pattie)

225 — PRACTICE IN TESTING: INTELLIGENCE TESTS. This course provides advanced laboratory practice in the measurement of intelligence by individual techniques. Six hours a week.

Prerequisite: Psychology 8 or equivalent.

(3) I, II (Glaser)

226 — PSYCHOLOGICAL MEASURING INSTRUMENTS. A study is made of a wide variety of psychological tests including group intelligence tests, personality and interest inventories, area aptitude tests, and special aptitude tests.

(3) II (Mellenbruch)

230 — PERSONALITY THEORY. An intensive survey of the major psychiatric, psychological, and sociological theories of personality structure and development. The relation of these theories to psychological research on personality will be examined.

(3) I (Pattie)

234a — PRINCIPLES OF TEST CONSTRUCTION. A survey of the principles involved in different types of standardized tests, followed by the construction of an original test by the student.

Prerequisite: Psychology 215.

(3) I (Mellenbruch)

234b — TEST STANDARDIZATION. A continuation of 234a. The student will administer a revised form of his preliminary test to an adequate sampling of the appropriate population and will determine its reliability and validity.

Prerequisite: Psychology 234a.

(3) II (Mellenbruch)

235 — DIAGNOSIS AND COUNSELING IN A STUDENT PERSONNEL PROGRAM. An advanced course in techniques for collecting information for student counseling, diagnostic techniques, and the techniques of counseling and interviewing.

Prerequisites: A graduate major in psychology or education and Psychology 121. (3) II (Croft)

237 — CLINICAL TESTING. Practical experience in the application of clinical diagnostic techniques to a variety of pathological subjects.

Prerequisite: Psychology 225. (2) I, II (Watson)

238 — THE RORSCHACH TEST. An introduction to the Rorschach test as a clinical instrument. Practice in administering, scoring and interpreting the test.

Prerequisite: Psychology 219. (4) I (Dimmick)

239 — THE THEMATIC APPERCEPTION TEST. An introduction to the Thematic Apperception Test as an instrument for obtaining information concerning thought content, attitudes, and feelings. Practice in administering, scoring, interpretation.

Prerequisite: Psychology 238. (3) II (Rosemen)

240a — THERAPEUTIC PROCEDURES. Theory and technique of non-directive psychotherapy. Consideration will be given to the personality theory formulated for the technique and the supporting evidence. Supervised counseling experience.

Prerequisite: Psychology 219. (3) I (Bills)

240b — THERAPEUTIC PROCEDURES. History, evolution and rationale of various psychotherapeutic procedures including directive psychotherapy, play therapy, use of painting and drawing. Demonstrations and supervised experience in these techniques.

Prerequisite: Psychology 219. (3) II (Dimmick)

241 — MOTIVATION. A survey of our present knowledge — clinical, experimental, and observational — of affective and conative factors in psychopathology. Psychoanalytic theory of motivation of behavior is emphasized.

(3) II (Dimmick)

245 — ADVANCED ABNORMAL PSYCHOLOGY. Special consideration is given the neuroses and the psychoses. Emphasis is placed upon the problems of differential diagnosis through the use of psychological techniques.

Prerequisites: a master's degree in psychology or equivalent training; and permission of instructor. (3) II (Dimmick)

250 — THE RORSCHACH TEST. Advanced course. In this course emphasis will be placed on the interpretation of a wide range of normal and pathological Rorschach records.

Prerequisite: Psychology 238. (4) II (Dimmick)

270 — PSYCHOLOGICAL EXPERIMENTATION. A study of the application of experimental methods in the major areas of psychology, including sensation and perception, learning, motivation, emotion, and personality. The design of research studies will be emphasized.

Prerequisites: Psychology 108 and 113. (3) I, II (Calvin and Glaser)

300a — MEDICAL THERAPEUTIC PROCEDURE. Rationale, procedures, and results of four important psychiatric therapeutic methods: (1) electrical

and pharmacological shock, (2) narcohypnosis or drug-analytic methods, (3) malaria and other types of fever therapy, and (4) prefrontal lobotomy.

(1) I (Straus)

300b — MEDICAL THERAPEUTIC PROCEDURE. This course presents the history, rationale, indications, procedures, and results of psychotherapeutic methods.

(1) II (Straus)

310a — PRACTICUM IN CLINICAL PSYCHOLOGY. Students rotate among five different institutions, including neuropsychiatric hospitals, reformatories, institutes for the feeble-minded, and child guidance clinics.

Prerequisites: Psychology 226, 238.

(3) I, II (Staff)

310b, c, etc. — PRACTICUM IN CLINICAL PSYCHOLOGY. Continuation of 310a. These numbers are provided for registration in succeeding semesters.

(3) I, II (Staff)

311a — PRACTICUM IN STUDENT PERSONNEL. Nine hours of supervised work each week in the University Personnel Office.

(3) I, II (Croft)

311b, c, etc. — PRACTICUM IN STUDENT PERSONNEL. Continuation of 311a. These numbers are provided for registration in succeeding semesters.

(3) I, II (Croft)

312a — PRACTICUM IN CHILD PSYCHOLOGY. Nine hours of supervised work each week.

(3) I, II

312b, c, etc. — PRACTICUM IN CHILD PSYCHOLOGY. Continuation of 312a. These numbers are provided for registration in succeeding semesters.

(3) I, II

431a-p — SPECIAL FIELD PRACTICUM. An intensive course in field work for students working toward the doctorate with a major in clinical psychology. Minimum of twenty hours a week.

(1) I, II, S (Dimmick)

500-1, 2, 3 — THESIS.

(0)

ZOOLOGY

101a — HISTOLOGY. Histology of the tissues. A course in the technique of preparation of animal tissues for microscopic study. Practice in imbedding, staining, sectioning, mounting, and identification of tissues.

Prerequisite: Zoology 1.

(4) I, II, S (Brauer, Sawyer)

101b — HISTOLOGY. Histology of the organs. A continuation of Course 101a in which the studies are based on the organs and special attention given to pathology.

Prerequisite: Zoology 101a.

(3) II, S (Brauer)

102 — ORNITHOLOGY. A study of the life-histories, habits, identification, structure, adaptations, and physiology of birds. Special emphasis upon migrations, songs, nests and economic importance of our native birds. Lectures; field excursions; laboratory studies.

Prerequisite: Zoology 1.

(4) II, S (Allen, Barbour)

103a — GENERAL ENTOMOLOGY. A beginning course in the study of this greatest group of the Animal Kingdom. Anatomy, morphology, adaptations,

life-histories of representatives of the most important orders of insects and other arthropod classes.

Prerequisite: Zoology 1.

(3) I (Allen)

103b — GENERAL ENTOMOLOGY. Continuation of 103a. More detailed study of the orders and many representative families. Methods of making and preserving insect collections. Identification; life-history, ecology of many insect species. Making an individual collection.

Prerequisite: Zoology 103a.

(3) II (Allen)

105 — PARASITOLOGY. Protozoan, helminth and arthropod parasites of man and domestic animals, emphasis on etiology, epidemiology, methods of diagnosis, control measures, and life histories. Techniques for host examination and preparation of material for study.

Prerequisite: Zoology 1.

(4) I, S (Edney)

106 — EMBRYOLOGY. A general course in ontogeny. Studies in maturation, fertilization, cleavage, organogenesis and anomalies of development with laboratory work based on the chick and pig.

Prerequisite: Zoology 1.

(4) II, S (Brauer, Sawyer)

108a — PRINCIPLES OF ZOOLOGY (Evolution). An advanced lecture course on some of the fundamental principles of animal biology. Organic evolution and related dynamic aspects of the living organism. Three times a week.

(2) I, S (Allen)

108b — PRINCIPLES OF ZOOLOGY (Heredity). Lectures and recitations on principles of heredity, variation and eugenics. Two hours per week.

(2) II, S (Sawyer)

109 — ANIMAL ECOLOGY. An analysis of the environment and the respective adjustments of animal life to the environmental complex. Habitats, food, respiratory needs and mechanisms, life-histories, animal associations, adaptations.

Prerequisite: Zoology 1.

(3) I (Allen)

110a-f — INDEPENDENT WORK. Special problems for individual students who are capable of pursuing independent investigations. For Zoology Majors.

(3 ea.) I, II, S (Staff)

111 — SPECIAL MICROTECHNIQUE. Special methods in histological techniques for students in Zoology, Pathology and Anatomy.

Prerequisites: Zoology 101a, b.

(3) I, II (Brauer)

112 — ICHTHYOLOGY. Taxonomy of fishes with life-histories and biology of types. Fish structure and physiology, habits, ecology. Fish-culture and economic Ichthyology; care of fishes, aquaria, etc. Elements of fresh-water fishery administration.

Prerequisite: Zoology 1.

(4) I (Allen)

114a-f — ZOOLOGICAL SEMINAR. Reports on: technical papers in scientific journals, book review, recent developments in Zoology, scientific meetings. Tutorial instruction preparatory to comprehensive examination. Required of all majors in Zoology.

(1 ea.) I, II (Staff)

117 — MEDICAL PROTOZOOLOGY. The etiology, epidemiology, pathology, diagnosis, prophylaxis and control of parasitic protozoa, with special

emphasis on life cycles and detailed studies of the protozoan parasites of man. Given alternate years.

Prerequisite: Zoology 105.

(4) II, S (Edney)

119 – HELMINTHOLOGY. The etiology, epidemiology, pathology, diagnosis, prophylaxis and control of trematode, cestode and nematode parasites of vertebrates, with special emphasis on those of veterinary and medical importance. Given alternate years.

Prerequisite: Zoology 105.

(4) II, S (Edney)

120 – CYTOLOGY. A study of recent concepts of the organization of protoplasm and correlated activities in animal cells. Two lectures, four hours laboratory.

Prerequisites: Zoology 1, 101a.

(4) I (Sawyer)

123 – MEDICAL ENTOMOLOGY. Study of Arthropod vectors of disease. Structure, collection, identification, control measures and life history studies. Given alternate years.

Prerequisite: Zoology 105.

(4) I, S (Edney)

140 – HERPETOLOGY. Designed to acquaint the student with the amphibians and reptiles of eastern North America, their taxonomy, adaptations and natural history. Given alternate years.

Prerequisite: Zoology 1.

(4) II (Barbour)

141 – MAMMALOLOGY. Designed to acquaint the student with the mammals of eastern North America, their taxonomy, adaptations and natural history. Given alternate years.

Prerequisite: Zoology 1.

(4) I (Barbour)

157a – INVERTEBRATE ANATOMY. An advanced course on the comparative anatomy of invertebrate animals with special attention paid to phylogeny, organology, and taxonomy.

Prerequisite: Zoology 1.

(4) I (Braucher)

157b – COMPARATIVE VERTEBRATE ANATOMY. Systematic consideration of chordates with emphasis on vertebrates. Comparative studies of chordate morphology, phylogeny, ontogeny, organology, physiology and homology. Laboratory studies on typical prochordates, cyclostomes, gnotostomes and the cat.

Prerequisite: Zoology 1.

(4) I (Edney)

166 – PHYSIOLOGY OF DEVELOPMENT. A review of theories of differentiation and a consideration of the genetic environment, and correlative physiological factors in differentiation. Lectures, assigned readings and literature reports.

Prerequisites: Zoology 1, 7a, b or 106.

(3) I (Braucher)

COURSES PRIMARILY FOR GRADUATE STUDENTS.

Qualified students may elect work in any special field listed below. Independent work under direction, with conferences on objectives, principles, materials, methods, analysis of data and conclusions. Progress reports required at intervals.

202a-d – PROBLEMS IN ORNITHOLOGY. (3) I, II, S (Barbour)

205a-d — PROBLEMS IN PARASITOLOGY. (3) I, II, S (Edney)

206a-d — PROBLEMS IN EMBRYOLOGY AND HISTOLOGY.
(3) I, II, S (Brauer)

209a-d — PROBLEMS IN ECOLOGY. (3) I, II, S (Allen)

212a-d — PROBLEMS IN ICHTHYOLOGY. (3) I, II, S (Allen)

220a-d — PROBLEMS IN CYTOLOGY. (3) I, II, S (Sawyer)

221a-d — PROBLEMS IN HERPETOLOGY & MAMMALOLOGY.
(3) I, II, S (Barbour)

500-1, 2, 3 — THESIS.

(0) (Staff)

*Prerequisites: the bachelor's degree in Zoology, permission
of instructor and evidence of capacity for research.*

IV. PHYSICAL SCIENCES

CHEMISTRY

Work leading to the master's degree and to the doctor's degree with a major in chemistry must conform to the general rules and regulations of the Graduate School.

For the degree of Master of Science, twenty-four semester hours in graduate courses exclusive of the thesis, one academic year (36 weeks) in residence, and an acceptable thesis, are required. A good reading knowledge of scientific German is required. It is strongly recommended that the candidate be able to read scientific French also.

A maximum of one-third of the work may be taken in courses lying outside of the department which are approved by the student's committee.

The degree of Doctor of Philosophy is conferred upon a candidate who, after completing not less than three years of graduate work in chemistry and allied fields, presents sufficient evidence of scholarly attainments. Evidence is based on course work, research, examinations, and the dissertation.

110a, b — ADVANCED INORGANIC CHEMISTRY. A systematic course in inorganic chemistry with especial emphasis upon the preparation and reactions of various types of inorganic compounds. Lecture, two hours.
Prerequisite: quantitative analysis (2 ea.) 1, II, S (Schreyer)
and organic chemistry.

111 — ADVANCED INORGANIC CHEMISTRY. Laboratory exercises are chosen to illustrate the methods of preparation of the different classes of inorganic compounds, and to provide training in the newer techniques in the field.
Prerequisite (or to be taken concurrently): (1) I, II, S (Schreyer)
Chemistry 110a.

114 — NON-AQUEOUS SOLUTIONS. A study of the properties of non-aqueous solutions and of reactions in non-aqueous media.
Prerequisite: Chemistry 140b. (2) II (Dawson)
(Offered 1949-50 and alternate years thereafter.)

115a, b — NUCLEAR CHEMISTRY. The chemistry of the radio-elements and other substances involved in nuclear reactions. Lecture, two hours.
Prerequisite: Chemistry 140b. (2) I, II (Dawson)
(Offered 1948-49 and alternate years thereafter.)

120 — ADVANCED QUALITATIVE ANALYSIS. Qualitative analysis for the anions and the separation and detection of the cations of the less common elements. Lecture, one hour; laboratory, six hours. (3) I (Schreyer)

121 — SEMIMICRO QUANTITATIVE ANALYSIS. A laboratory course devoted to the quantitative analysis of both organic and inorganic substances by the use of semimicro techniques. Lecture, one hour; laboratory, six hours.
Prerequisite: Chemistry 21b. (3) II (Cavagnol)

122 — INSTRUMENTAL ANALYSIS. The applications of microscopic, colorimetric, spectrophotometric, polarographic, and electrometric methods.

Lecture, one hour; laboratory, six hours.

Prerequisite: Chemistry 21b.

(3) I (Wagner)

125 – ADVANCED QUANTITATIVE ANALYSIS. The complete analysis of a silicate mineral or ore, and the alloys of iron, copper, and aluminum. Lecture, one hour; laboratory, six hours.

Prerequisite: Chemistry 21b.

(3) II (Wagner)

(Offered 1948-49 and alternate years thereafter.)

126 – INDUSTRIAL ANALYSIS. The use of special industrial control methods for the analysis of water, coal, petroleum, fuel gases and atmospheric constituents. Laboratory, six hours.

Prerequisite: Chemistry 21a.

(2) II (Wagner)

(Offered 1949-50 and alternate years thereafter.)

127 – MICROSCOPIC ANALYSIS. Qualitative and semi-quantitative analysis of microgram amounts of various cation groups in a single drop under a microscope. Laboratory, six hours.

Prerequisite: Chemistry 21b.

(2) (Wagner)

(Offered 1949-50 and alternate years thereafter.)

129 – SELECTED PROBLEMS IN QUANTITATIVE ANALYSIS. Laboratory, nine hours. (Offered upon request.)

Prerequisite: Chemistry 21b.

(3) (Stewart, Wagner)

130a, b – ORGANIC CHEMISTRY. A systematic study of organic compounds. Lecture, three hours; laboratory, four hours.

Prerequisite: Chemistry 1b.

(5) I, II, S (Barkenbus)

133 – QUALITATIVE ORGANIC ANALYSIS. A systematic study of the separation and identification of organic compounds. Laboratory, nine hours.

Prerequisite: Chemistry 130b or 30b.

(3) I, S (Barkenbus, Estes)

136 – SYNTHETIC ORGANIC CHEMISTRY. A critical comparison of preparation methods accompanied by laboratory work and reports. Laboratory, nine hours.

Prerequisite: Chemistry 130a.

(5) II (Barkenbus)

140a, b – PHYSICAL CHEMISTRY. The fundamental principles of chemistry are studied with emphasis upon the application of these in the correlation of natural phenomena. Lecture and recitation, three hours.

Prerequisites: quantitative analysis;

(3) I, II, S (Dawson)

Mathematics 20b; and Physics 3b.

141 – CHEMICAL THERMODYNAMICS. Principles and applications of chemical thermodynamics. Lecture, three hours.

Prerequisite: Chemistry 140b.

(3) II (Dawson)

143 – PHYSICAL CHEMISTRY. For students in agriculture and the biological sciences. Lecture and recitation, three hours; laboratory, six hours.

Prerequisites: Chemistry 1b or 4b, and 37; and Physics 1b.

(5) I

(Offered 1948-49 and alternate years thereafter.)

144a, b – PHYSICAL CHEMISTRY LABORATORY. Laboratory studies in physical chemistry to accompany Chemistry 140a. Laboratory, six hours.

(2) I, II, S (Zimmerman)

145 — COLLOID CHEMISTRY. Lectures, recitations, and assigned readings on the chemistry of colloids. Lectures and recitations, two hours.

Prerequisite: Chemistry 140b.

(2) II (Schreyer)

(Offered 1948-49 and alternate years thereafter.)

147a, b — PHYSICAL CHEMISTRY FOR ENGINEERS. The principles of physical chemistry are studied with emphasis upon the application of these in mining and metallurgical engineering. Lecture and recitation, three hours; laboratory, three hours.

Prerequisites: Chemistry 21a, Mathematics 20b, and Physics 3b.

(4, 4) I, II

150a, b — PHYSIOLOGICAL CHEMISTRY. A study of the chemistry of living processes. Lectures and recitations, three hours; laboratory, three hours.

Prerequisites: Chemistry 1b or 4b and 37; and Physics 1b.

(4) I, II (Tiffany)

160 — INDUSTRIAL CHEMISTRY. A survey of the chemistry of manufacturing processes. Lecture, three hours.

Prerequisite: Chemistry 140b.

(3) I (Meadow)

161 — INDUSTRIAL CHEMICAL CALCULATIONS. Lecture and recitations, two hours.

Prerequisite: Chemistry 140b.

(2) II (Meadow)

181 — CHEMICAL LITERATURE. Training in the use of chemical literature. One hour per week.

Prerequisite: permission of Department.

(1) I (Stewart)

182 — LABORATORY ARTS. The fabrication of chemical apparatus of glass, metal, and plastics.

Prerequisite: major in the Department of Chemistry with Junior standing.

(2) I, II (Estes)

188a — SEMINAR. Reports and discussions on recent research and current chemical literature. Attendance at the seminar for two semesters is required before one hour of credit is earned.

(0) (Staff)

188b — SEMINAR. A continuation of 188a.

(1) II (Staff)

210 — TOPICS IN INORGANIC CHEMISTRY. The chemistry of the rare earths and other less common elements. Selected topics dealing with recent advances in the field. Lecture, two hours.

Prerequisite: Chemistry 110b.

(2) I (Schreyer)

(Offered 1949-50 and alternate years thereafter.)

220 — THE CHEMICAL POLARIZING MICROSCOPE. The theory and practice in the use of the polarizing microscope as a means of identifying crystalline chemical substances. Laboratory, six hours.

Prerequisite: Chemistry 140b.

(2) II

(Offered 1949-50 and alternate years thereafter.)

221 — QUANTITATIVE MICROANALYSIS. The quantitative analysis of organic and inorganic substances in the microgram and submicrogram range. Laboratory, six hours.

Prerequisite: Chemistry 21b.

(2) I

(Offered 1948-49 and alternate years thereafter.)

222 — ELECTROMETRIC ANALYSIS. The theory and application of potentiometric, polarographic, and conductometric measurements. Lecture, one hour; laboratory, three hours.

Prerequisites: Chemistry 122 and 140b.

(2) I (Wagner)

(Offered 1948-49 and alternate years thereafter.)

230a, b — SYNTHESIS OF ORGANIC COMPOUNDS. A thorough study of the types of reactions used in organic synthesis with emphasis on the conditions and reagents that can be used. Lecture, two hours.

Prerequisite: Chemistry 130b.

(2) I, II (Barkenbus)

(Offered 1948-49 and alternate years thereafter.)

232 — STEREOISOMERISM OF CARBON COMPOUNDS. Optical isomerism; polarimetry; stereochemistry of biphenyls and related compounds; cis-trans isomerism; and stereochemistry of the sugars. Lectures, three hours.

Prerequisite: Chemistry 130b.

(3) II (Estes)

234a, b — THE ELECTRONIC THEORY AS APPLIED TO ORGANIC REACTIONS. A study of the modern viewpoints of valence and their application to the interpretation of organic reactions. Lecture, two hours.

Prerequisites: Chemistry 130b and 140b.

(2) I, II (Estes)

(Offered 1949-50 and alternate years thereafter.)

238 — SURVEY OF ORGANIC CHEMISTRY. A general survey of the field of organic chemistry. Lecture, four hours. (Offered each year.)

Prerequisite: Chemistry 130b or equivalent.

(4) I (Bakenbus)

239a, b — TOPICS IN ORGANIC CHEMISTRY. Selected topics which may include heterocyclic organic compounds, carbo-hydrates, nitrogen compounds, and other recent advances in the field. Lecture, two hours.

Prerequisite: Chemistry 130b.

(2) I, II

(Offered 1949-50 and alternate years thereafter.)

240 — ELECTROCHEMISTRY. Modern theories of solutions. Applications of electrochemical methods in determining the properties of solutions. Equilibrium in solutions of electrolytes. Lecture, three hours.

Prerequisite: Chemistry 140b.

(3) I (Dawson)

(Offered 1948-49 and alternate years thereafter.)

244 — PHASE RULE. Lectures and assigned readings on the theory and application of the phase rule. Lecture, two hours.

Prerequisite: Chemistry 140b.

(2) II (Schreyer)

(Offered 1948-49 and alternate years thereafter.)

245 — CATALYSIS. Theories of homogenous and heterogeneous catalysis and applications in chemical processes. Lecture, two hours.

Prerequisite: Chemistry 140b.

(2) II

(Offered 1949-50 and alternate years thereafter.)

246 — CHEMICAL KINETICS. Studies of chemical reactions from the standpoint of velocity and mechanism. Lecture, three hours.

Prerequisite: Chemistry 140b.

(3) (Roberts)

(Offered 1949-50 and alternate years thereafter.)

248 – CHEMICAL PRINCIPLES. An advanced course dealing with the fundamental principles of physical chemistry. Lecture four hours.

Prerequisites: college physics; integral calculus; and one course in physical chemistry. (4) I (Dawson)

249a, b – TOPICS IN PHYSICAL CHEMISTRY. Selected topics which may include structure of crystals, molecular spectra, nature of the chemical bond, and other recent advances in the field. Lecture, two hours.

Prerequisites: Chemistry 140b; and Mathematics 105. (2)
(Offered 1949-50 and alternate years thereafter.)

288a-h – GRADUATE SEMINAR. Reports and discussions on recent research and current literature. Required of all graduate students.

(1 ea.) I, II (Staff)

290a-1 – RESEARCH IN CHEMISTRY. Work may be done in the following fields, subject to the approval of the Departmental Graduate Committee: Analytical, Industrial, Inorganic, Organic, or Physical Chemistry.

(5 ea.) I, II, S (Staff)

ENGINEERING (See Engineering)

GEOGRAPHY

100 – REGIONAL GEOGRAPHY OF ANGLO-AMERICA. A regional study of natural resources, industries, and economic and social developments of the United States, Canada and Alaska.

Prerequisite: one geography course or permission of instructor. (2) I, S (Tuthill)

101 – GEOGRAPHY OF KENTUCKY. Emphasis upon problems involving the physical environment of Kentucky, human activities, distribution of population, and sequant occupance with special reference to regional and inter-regional adjustments.

Prerequisite: one geography course or permission of instructor. (2) II, S (Schwendeman)

102 – REGIONAL GEOGRAPHY OF LATIN AMERICA. Study of the countries and geographic regions of Mexico, Central America, and South America. Special reference will be made to inter-American relationships.

Prerequisite: one geography course or permission of instructor. (2) I (Schwendeman)

103 – REGIONAL GEOGRAPHY OF EUROPE. The European continent exclusive of the U.S.S.R. (See Geography 204). Discussion of environmental factors on a continental and regional basis. Population problems, economic adjustments, and political significance of resources.

Prerequisite: one geography course or permission of instructor. (2) I (Field)

104 – REGIONAL GEOGRAPHY OF ASIA. A study of Asiatic countries and their geographic foundations. Major emphasis is given to the problems and development of the U.S.S.R., India, China, and Japan.

Prerequisite: one geography course or permission of instructor. (2) II (Tuthill)

105 — REGIONAL GEOGRAPHY OF AUSTRALIA AND THE PACIFIC ISLANDS. A study made of the geographic problems and adjustments of the peoples and countries of the Pacific area.

*Prerequisite: one geography course
or permission of instructor.*

(2) II (Field)

106 — REGIONAL GEOGRAPHY OF AMERICA. A study of African peoples, countries and colonies from the viewpoint of their adjustment to the natural regions.

*Prerequisite: one geography course
or permission of instructor.*

(2) II (Field)

110 — ADVANCED ECONOMIC GEOGRAPHY. A course to enable upper division students to carry on more detailed analyses of the various commodities and activities which contribute to national and international economic life.

Prerequisite: Geography 10.

(2) II (Tuthill)

112 — CONSERVATION OF NATURAL RESOURCES. A study of the bases, needs, and problems of conserving natural resources.

Prerequisite: Geography 10 or permission of instructor.

(2) I (Tuthill)

122 — APPLIED CLIMATOLOGY. Climatological data as related to such specific occupations as agriculture, ranching, silviculture, manufacture, transportation, and recreation. Attention will also be directed to the locative influences of climate.

*Prerequisite: Geography 22 or permission
of instructor.*

(2) II (Schwendeman)

130 — REGIONAL FIELD OBSERVATION. A comparative study of selected regions by field trip. The work will consist of preliminary reading, traveling over the regions with close inspection of selected features, and written report of both reading and field work.

Prerequisite: one geography course.

(3) S (Staff)

132a-d — INDEPENDENT WORK IN GEOGRAPHY. Individual research involving such problems as: (a) materials and methods in teaching geography; (b) the historical evolution of geography; (c) map reading and interpretation; (d) special area studies; (e) other topics may be elected by consent of instructor.

Prerequisite: permission of instructor.

(3) I, II, S (Staff)

133a-k — READING AND REPORT. Students registered in any two credit upper division course in geography may earn a third credit in this course by registering for Geography 133 and undertaking a study of a special problem related to the course. (Geography 133 can be elected only by students regularly enrolled in an upper division 2 credit course.)

(1 ea.) I, II, S (Staff)

134 — CARTOGRAPHY. A course in the construction and interpretation of maps.

(3) I, II, S (Foley)

140 — GEOGRAPHICAL FOUNDATIONS OF WORLD POWER. A study of the influence of location, size, form, surface, climate, and natural resources to national power. Consideration will be given to such modern theories as geopolitics.

*Prerequisite: one geography course
or permission of instructor.*

(2) I (Schwendeman)

202 — SEMINAR, GEOGRAPHY OF THE CARIBBEAN REGION. Principal emphasis on the islands of the Caribbean Region. A study will be made of the geographical bases for economic livelihood, the significance of their location and their individual problems.

Prerequisite: Geography 102.

(3) I (Tuthill)

203 — SEMINAR, GEOGRAPHY OF THE MEDITERRANEAN BASIN AND THE MIDDLE EAST. The study of geographical problems in the Mediterranean area. Their effects upon geographical developments in Europe, Asia, and Africa.

Prerequisite: Geography 103.

(3) I (Schwendeman)

204 — SEMINAR, GEOGRAPHY OF THE U.S.S.R. A study of the regional structure, relationships and problems within Soviet Russia. An evaluation will be made of the resource basis of modern Soviet development.

Prerequisite: Geography 104.

(3) II (Tuthill)

GEOLOGY

101a — PALEONTOLOGY. A study of fossil invertebrates, their nature, classification, and geological distribution. One lecture, four hours laboratory per week.

Prerequisites: Geology 30a, b; and general zoology or background in zoology.

(3) I (McFarlan)

101b — PALEONTOLOGY. The study of geological faunas. Practice in determining stratigraphic horizons. One lecture, four hours laboratory per week.

Prerequisite: Geology 101a.

(3) II (McFarlan)

105a-i — INDEPENDENT WORK IN GEOLOGY. Directed work in independent investigations. Thesis required.

(3 ea.)

107a-f — ADVANCED FIELD GEOLOGY. A field course in geologic mapping involving problems of local structure and stratigraphy. Six hours a week in the field.

Prerequisites: Geology 10a, b.

(2) I, II (McFarlan and Nelson)

112 — ECONOMIC GEOLOGY. Mineral deposits other than petroleum and natural gas. Distribution, mode of occurrence, origin, methods of search for and uses.

Prerequisites: Geology 30a, b; and 123a, b.

(4) (Brown)

118a-d — FIELD WORK IN REGIONAL GEOLOGY. Eight weeks in the field in Colorado. The course is an effort to bring the student into contact with diverse geological phenomena and problems. Practice in geological field methods. See special announcement. Required of major students.

Prerequisites: Geology 30a, b.

(8) S (McFarland, Nelson and Stokely)

120a — GEOLOGY OF KENTUCKY. A study of the geological features of the state other than mineral resources. These include the major events in its geological history, the development of regional characteristics and an explanation of its scenic and natural wonders.

(3) McFarlan

120b — GEOLOGY OF KENTUCKY. The mineral resources of the state, their distribution, origin, and uses. Fossil record.

(3) McFarlan

123a — MINERALOGY. A study of geometrical crystallography and other physical properties useful in mineral identification. One lecture, four hours laboratory per week.

Prerequisites: Geology 30a, b; and Chem. 1a, b, or background in chemistry. (3) I (Fisher)

123b — MINERALOGY. The determination of minerals by physical properties, blowpipe analysis, and the petrographic microscope. A study of the origin, occurrence, and associations. One lecture, four hours laboratory per week.

Prerequisite: Geology 123a. (3) II (Fisher)

126a-d — SEMINAR.

(1 ea.)

127 — PETROLEUM GEOLOGY. The origin and accumulation of petroleum and natural gas. A study of geological methods used in exploratory work. Geology of the principle producing fields.

Prerequisites: Geology 30a, b; and general elementary physics. (2) Jacobsen

129 — ELEMENTARY PETROLOGY. A megascopic study of the common rocks with emphasis on the sedimentary rocks and processes of sedimentation.

(3) (Jacobsen)

130 — ELEMENTARY STRUCTURAL GEOLOGY. An introduction to earth structures. Advanced geological map interpretation handled from the regional point of view.

(3) (Nelson)

208 — STRUCTURAL GEOLOGY. A study of the structural features of the earth's crust with an analysis of the mechanics involved. Three lectures and recitations, or 2 lectures and one laboratory per week.

Prerequisites: Physics 1a, b; Geology 30a, b; and 130. (3) (Nelson)

210a — STRATIGRAPHIC PALEONTOLOGY. Succession of faunas and the use of fossils for stratigraphic correlation. Lecture, 1 hour; laboratory, 4 hours.

(3) I (McFarlan)

210b — STRATIGRAPHIC PALEONTOLOGY. A continuation of 210a. One lecture, four hours laboratory per week.

(3) II (McFarlan)

212a — OPTICAL MINERALOGY. A study of the optical properties of minerals in thin sections by means of the petrographic microscope. One lecture, four hours laboratory per week.

Prerequisites: Geology 123a, b; and Physics 1a, b. (3) (Brown)

212b — SEDIMENTARY PETROLOGY. A study of sedimentary rocks based on microscopical analysis. One lecture and four hours of laboratory per week.

Prerequisite: Geology 212a. (3)

212c — PETROLOGY OF THE IGNEOUS ROCKS. The occurrence, origin and classification of igneous rocks. Identification with the petrographic microscope. An introduction to the metamorphic rocks. One lecture, four hours laboratory per week.

Prerequisite: Geology 212a. (3) (Brown)

213 — ADVANCED ECONOMIC GEOLOGY. Lecture, 2 hours; laboratory, 2 hours.

(3) (Nelson)

215 — ADVANCED PETROLEUM GEOLOGY. The use of well cuttings, electrical logs, and other methods and principles of exploratory geology. A study of sedimentation and sedimentary rocks. Lecture, 2 hours; laboratory, 4 hours. (4) (Jacobsen)

216 — ENGINEERING AND GROUNDWATER GEOLOGY. Professional training in the work of the geologic consultant and staff geologist in engineering work. Exploratory work for industrial and farm groundwater supplies. (3)

217a-d — SEMINAR. (1 ea.)

500-1, 2, 2 — THESIS. (0)

MATHEMATICS AND ASTRONOMY

Graduate students will be able to obtain sufficient work to qualify for the doctor's degree. Twelve semester hours beyond integral calculus are required before counting work toward an advanced degree.

101a-f — INDEPENDENT WORK IN MATHEMATICS. Reading courses below the 200 level for upper division and graduate students of high standing. *Prerequisites: consent of the Department.* (3 ea.) Staff

102 — VECTOR ANALYSIS. Contents: the algebra and calculus of vectors; applications to geometry, electricity, and physics; harmonic functions and potentials. *Prerequisite: Math. and Ast. 20b.* (3) (Goodman)

103 — THEORY OF EQUATIONS. Topics included: solutions of cubic and quartic equations; ruler and compass constructions; roots of unity; solutions of numerical equations, systems of linear equations, symmetric functions, and resultants. *Prerequisite: Math. and Ast. 20a.* (3) (Downing)

105a — DIFFERENTIAL EQUATIONS. A first course including first order linear differential equations, homogeneous equations, exact equations, second order equations with constant coefficients, and numerous applications. *Prerequisite: Math. and Ast. 20b.* (3) I, II, S (Staff)

105b — DIFFERENTIAL EQUATIONS. Further study of ordinary differential equations, special types, singular solutions, and integration in series. *Prerequisite: Math. and Ast. 105a.* (3) (Senior Staff)

106a, b — ADVANCED CALCULUS. Continuous functions, differentiable functions, infinite series, implicit functions, Riemann integral, the gamma and beta functions, line, surface and space integrals. *Prerequisite: Math. and Ast. 25 or equivalent.* (3 ea.) (Downing)

107 — PROJECTIVE GEOMETRY. Contents: harmonic forms, projectively related primitive forms, curves and pencils of rays of second order, ruled surfaces of second order, theory of poles and polars, involution, inversion. *Prerequisite: consent of instructor.* (3) (Pence)

109a, b — FUNCTIONS OF A COMPLEX VARIABLE. Differentiation and integration, contour integration, poles and residues, the linear fractional transformation, conformal mapping, series, Riemann surfaces, applications. *Prerequisite: Math. and Ast. 106b.* (3 ea.) (Goodman)

116 — ANALYTIC MECHANICS. Topics included: composition and resolution of forces, statics of a particle, moments, couples, center of gravity, friction, simple harmonic motion, work, energy, and constrained motion.

Prerequisite: Math. and Ast. 20b.

(3) (Leser)

118 — SOLID ANALYTIC GEOMETRY. Systems of planes, plane coordinates, the concept of infinity, transformation of coordinates, types of surfaces, quadric surfaces, tetrahedral coordinates.

Prerequisite: Math. and Ast. 20a.

(3) (Brown)

119 — COLLEGE GEOMETRY. Introduction to a wide and extensive body of synthetic geometry. It concerns the geometry of the triangle and the circle, and requires only the known Euclidean concepts.

Prerequisite: consent of instructor.

(3) (Baskett)

120 — MATHEMATICAL STATISTICS. Topics considered: averages, coefficients of dispersion and skewness, correlation and regression lines, curve fitting, Bernoulli Theorem, DeMoivre-Laplace Theorem, generating functions, sampling.

Prerequisite: Math. and Ast. 20b.

(3) (South)

122 — ACTUARIAL MATHEMATICS. Theory of mortality tables, life annuities, premiums, terminal reserves, joint-life annuities and insurances.

Prerequisite: Math. and Ast. 20b.

(3) (South)

123 — CURVE TRACING. A study of various methods for sketching algebraic curves. Emphasis on the analytic polygon in finding approximations to the form of the curve in the finite portion of the plane and at infinity.

Prerequisite: consent of instructor.

(3) I (Pence)

126a, b — INTRODUCTION TO HIGHER ALGEBRA. Integral domains, fields, rings, polynomials, groups, vector spaces, matrices.

Prerequisite: Math. and Ast. 36

or consent of the instructor.

(3 ea.) (Ward)

127a, b — INTRODUCTION TO HIGHER GEOMETRY. Emphasis on fundamentals common to all geometry. Geometries associated with the projective group and the group of circular transformations.

Prerequisite: Math. and Ast. 27 or its equivalent.

(3) (Pence)

128a — INTRODUCTION TO APPLIED MATHEMATICS. Included in topics studied are infinite series, complex numbers, fourier series, linear differential equations, Laplace transforms and applications to electrical oscillations.

Prerequisite: Math. and Ast. C105a.

(3) (Leser)

128b — INTRODUCTION TO APPLIED MATHEMATICS. Further applications of Laplace transforms, Bessel functions, Legendre differential equations, the gamma, beta, and error functions.

Prerequisite: Math. and Ast. 128a.

(3) (Leser)

129 — PROBABILITY. Theorems of total and compound probability, Bernoulli's Theorem, Bayes' Theorem, Poisson Law, Expected value, Law of large numbers. Distribution functions and characteristic functions.

Prerequisite: Math. and Ast. 20b.

(3) (South)

132 — THE CALCULUS OF FINITE DIFFERENCES. A study of the methods of differencing, interpolation, finite integration, summation of series, approximate integration and difference equations.

Prerequisite: Math. and Ast. 20b.

(3) (South)

141 — INTRODUCTION TO THEORY OF NUMBERS. Divisibility, prime numbers, congruences and residues, Diophantine equations.

Prerequisite: consent of instructor.

(3) (Ward)

144a-f — PROBLEM SEMINAR. Reports on current research papers. Problems from various fields of mathematics.

Prerequisite: consent of instructor.

(2 ea.) (Senior Staff)

201a-f — INDEPENDENT WORK IN MATHEMATICS. Reading courses in the 200 group for graduate students.

(3 ea.) (Senior Staff)

202a, b — ALGEBRAIC CURVES. Topics include general properties of algebraic curves, the theory of residuation, singular points, unicursal curves, systems of curves.

Prerequisites: Math. and Ast. 127a, b.

(3) (Pence)

204a, b — CALCULUS OF VARIATIONS. The ordinary problem for the plane and space cases; the necessary conditions of Euler, Weierstrass, Legendre, and Jacobi. The parametric problem; the isoperimetric problem. Sufficiency conditions.

Prerequisite: Math. and Ast. 105b.

(3) (Downing)

205 — DIFFERENTIAL GEOMETRY. Metric differential geometry of curves and surfaces in 3 dimensional Euclidean space, geodesics, mapping of surfaces, absolute geometry of a surface.

Prerequisite: consent of instructor.

(3) I (Downing)

206 — THEORY OF GROUPS. Permutation groups, isomorphisms, the group postulates, abstract groups, automorphisms, quotient groups, Abelian groups.

Prerequisites: Math. and Ast. 126a, b, or consent of instructor.

(3)

208a, b — FUNCTIONS OF REAL VARIABLE. Brief discussion of real numbers; continuous functions, semi-continuous functions, functions of bounded variations; Stieltjes Integral, measure and integration.

Prerequisite: Math. and Ast. 106b, or consent of instructor.

(3 ea.) (Cowling)

209a-f — SELECTED TOPICS IN THE THEORY OF COMPLEX VARIABLES. Analytic continuation, functions with natural boundaries, gap theorems, over-convergence, entire functions, Dirichlet series.

Prerequisite: Math. and Ast. 109b, or consent of instructor.

(3 ea.) (Goodman)

210 — ADVANCED MATHEMATICAL STATISTICS. Theory of sampling, the Chi-square distribution, testing statistical hypotheses.

Prerequisite: Math. and Ast. 120.

(3) (South)

212a, b — SUMMABLE INFINITE PROCESSES. Fundamental limit ideas applied to infinite sequences, infinite series, infinite products, etc. Summability of Cesaro, Holder, Abel, Borel, and Leroy.

Prerequisite: Math. and Ast. 106b, or consent of instructor.

(3 ea.) (Cowling, Goodman)

213 — FOURIER SERIES. Expression of a general periodic function as a Fourier series, sufficient conditions for convergence, Fejer's theorem, applications.
Prerequisite: Math. and Ast. 106b. (3) (Cowling, Goodman)

214 — POTENTIAL FUNCTIONS. Topics considered: Attraction of bodies, Newtonian potential function, theorems of Green and Gauss, level surfaces, spherical harmonics.
Prerequisite: Math. and Ast. 105b. (3) (Downing)

220a, b — MATHEMATICS SEMINAR. (2 ea.) (Senior Staff)

221 — TENSOR ANALYSIS. Topics considered: the theory of tensors, quadratic differential forms, Riemannian geometry, pseudo-Euclidean geometry.
Prerequisite: consent of instructor. (3) (Cowling)

222 — ORTHOGONAL SYSTEM OF FUNCTIONS. This course supplements 221. Eigen value problems for linear differential equations, systems of orthogonal functions, spherical harmonics, hypergeometric and related functions, completeness.
Prerequisite: consent of instructor. (3)

223 — INTEGRAL EQUATIONS. Systems of ordinary linear equations, linear operators, orthogonal systems, linear integral equations of the second kind, theorems of Fredholm, Volterra's equation.
Prerequisite: consent of instructor. (3) (Cowling)

226a, b — HIGHER ALGEBRA. Groups, rings, fields, extension fields, Galois theory, linear algebras, hypercomplex numbers, ideals.
Prerequisites: Math. and Ast. 126a, b, or consent of instructor. (3) (Ward)

227a, b — HIGHER GEOMETRY. Topics included: Projective spaces, groups of collineations, invariants and covariants, Cremona transformations, the plane cubic and quartic, space curves, the cubic surface.
Prerequisites: Math. and Ast. 127a, b. (3) (Pence)

230 — TOPOLOGY. Calculus of sets, metric and separable spaces, complete spaces, continuous mapping, simply connected domains, accessibility and Jordan domains.
Prerequisites: Math. and Ast. 125a, b, or consent of instructor. (3)

231 — ADVANCED DIFFERENTIAL EQUATIONS. Existence theorems, partial differential equations, linear equations with periodic coefficients, classical equations, equations in infinitely many variables.
Prerequisite: Math. and Ast. 105b. (3) (Downing)

241 — NUMBER THEORY. Peano's Axioms, continued fractions, quadratic fields, algebraic integers, p-adic numbers, etc.
Prerequisites: Math. and Ast. 126b and 141. (3) (Ward)

500-1, 2, 3 — THESIS. (0) (Senior Staff)

ASTRONOMY

251a — CELESTIAL MECHANICS. Topics included: rectilinear motion, central forces, potential and attraction of bodies, and the problem of two bodies.
Prerequisite: Math. and Ast. 105a. (3) (Davis)

251b — CELESTIAL MECHANICS. Orbit computation, the problem of three bodies, and perturbations.

Prerequisite: Math. and Ast. 251a.

(3) (Davis)

PHARMACY

Major programs leading to advanced degrees are not at present offered in the College of Pharmacy.

101a — ADVANCED ORGANIC PHARMACEUTICAL CHEMISTRY. A study of the classification, source, properties, synthesis and uses of organic medicinal chemicals used as therapeutic agents. Lecture, one hour; laboratory, six hours.

Prerequisites: Phar. Chem. 31a, b.

(3) I (Gillis)

101b — ADVANCED ORGANIC PHARMACEUTICAL CHEMISTRY. A continuation of 101a. Lecture, one hour; laboratory, six hours.

Prerequisites: Phar. Chem. 31a, b.

(3) II (Gillis)

102 — BIOCHEMISTRY. Chemistry of carbohydrates, lipids, proteins, enzymes, and vitamins in relation to physiological processes. Special reference is made to compounds used in pharmacy. Included is practice in the use of the polarimeter, refractometer, colorimeter, Westphal balance, etc. Lecture, two hours; laboratory, six hours.

Prerequisites: Phar. Chem. 31a, b.

(4) I (Gillis)

103a — ADVANCED QUANTITATIVE PHARMACEUTICAL CHEMISTRY. Chemistry and assay of medicinal products, including newer synthetics, fixed oils, volatile oils, alkaloids, vitamins and enzymes. Laboratory exercises selected on basis of application to pharmaceutical products. Lecture, one hour; laboratory, six hours.

(3) I (Gillis)

103b — ADVANCED QUANTITATIVE PHARMACEUTICAL CHEMISTRY. A continuation of 103a. Lecture, one hour; laboratory, six hours.

Prerequisite: Phar. Chem. 103a.

(3) II (Gillis)

111a — DISPENSING PHARMACY. The application of fundamental pharmaceutical principles and techniques to the compounding of the various types of preparations encountered on prescriptions. Practical methods for insuring qualitative and quantitative accuracy are stressed. Lecture, two hours; laboratory, six hours.

Prerequisite: Pharmacy 27.

(4) I (Slessor)

111b — DISPENSING PHARMACY. Methods of detecting and handling common types of prescription incompatibilities. Film studies of projected handwritten prescriptions selected from current drug store files. Methods of prescription pricing. Lecture, two hours; laboratory, six hours.

Prerequisite: Pharmacy 111a.

4) II (Slessor)

122 — U.S.P. & N.F. DRUGS. A study of the official drugs with special attention to chemical drugs. Emphasis is given to synonyms, proprietaries of like composition, uses, dosage and common compounding incompatibilities. Lecture, three hours.

Prerequisite: Pharmacy 24b.

(3) I (Lesshafft)

123 — MODERN DRUGS. A comprehensive comparative study of the newer drugs used in pharmacy. Their uses, chemistry and proprietary forms of administration are considered. Lecture, three hours.

Prerequisite: Pharmacy 122.

(3) II (Lesshafft)

125a — PHARMACEUTICAL JURISPRUDENCE. Business law; food, drug and cosmetic laws; narcotic and poison laws; liquor and beverage laws; postal regulations; pharmacy laws; fair trade laws; social security; taxes; license; sanitation laws; court decisions relative to pharmacy. Lecture, three hours.

(3) I (Hubbard)

125 — PHARMACEUTICAL JURISPRUDENCE. A continuation of Pharmacy 125a. Lecture, three hours.

Prerequisite: Pharmacy 125a.

(3) II (Hubbard)

131a — BACTERIOLOGY AND SANITATION. Primarily an introduction to the fundamentals of general bacteriology. Includes lecture and laboratory studies on morphology, physiology, cultivation, identification and influence of bacteria. Lecture, two hours; laboratory, two hours.

(3) I (Walton)

131b — BACTERIOLOGY AND SANITATION. A continuation of Materia Medica 131a. This course is designed to acquaint the pharmacy student with the practical applications of bacteriological principles. Particular emphasis is placed on the given toxins, antitoxins, serums, and similar biologicals. Lecture, two hours; laboratory, two hours.

(3) II (Walton)

133 — HYGIENE AND PUBLIC HEALTH. A study of various public health agencies and their functions, and the relationship of the pharmacist to them and to the public. Special consideration is given diseases and conditions constituting major health problems. Lecture, two hours.

(2) I, II (Tucker)

138a — PHARMACOLOGY AND TOXICOLOGY. A presentation of the pharmacodynamic actions, modes of administration, toxic manifestations of drugs, and relationship of pharmacodynamic action to therapeutic use. Lecture, four hours; laboratory, two hours.

(5) I (Morris)

138b — PHARMACOLOGY AND TOXICOLOGY. A continuation of 138a. Presenting to the student emergency treatment in cases of acute poisoning and mechanical injury. Standard First Aid Methods are demonstrated. Acute and Chronic poisoning by noxious agents and application of remedial measures are discussed. Lecture, four hours; laboratory, two hours.

(5) II (Morris)

PHYSICS

The Department of Physics is well equipped with instruments of precision and has adequate library facilities necessary to the proper conduct of the following list of advanced and graduate courses:

104 — THEORETICAL MECHANICS. A lecture and problem course covering the fundamental laws of mechanics. Topics include kinematics of a particle, statics and dynamics of particles and rigid bodies, constrained motion, and oscillatory motion.

Prerequisites: Physics 3b and Mathematics 20b.

(4) (Koppius)

108 — LIGHT. A lecture and problem course covering the basic phenomena of optics. Topics treated include thick lenses, apertures, wave motion, inter-

ference, diffraction, polarization, and the theory of selected optical instruments.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Hanau)

110 – SPECTROSCOPY. A lecture and problem course dealing with the production, recording, measuring, and interpretation of atomic and molecular spectra. Topics include basic principles of atomic structure, spectrographs, photometry, and spectrographic analysis.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Hanau)

111 – ELECTRICITY AND MAGNETISM. A lecture and problem course dealing with the fundamental theory of electricity and magnetism. Topics include electrostatic forces and energy, conductors and dielectrics, magnetic forces, and transient and alternating currents.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Caswell)

114 – VACUUM TUBES AND CIRCUIT THEORY. A lecture and problem course covering the theory of vacuum tubes and associated circuits. It includes the solution of selected electronic circuits by the method of the Laplace operator.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Staff)

115 – THEORY OF MEASUREMENTS. A lecture and problem course in the analysis of experimental data. Topics treated include finding an empirical equation to fit a set of data, approximations, probability distributions, errors and deviations.
Prerequisites: Physics 104 and Mathematics 20b. (3) (Staff)

119 – X-RAYS AND CRYSTAL STRUCTURE. A basic lecture and problem course dealing with the production and properties of X-rays. Topics include absorption, scattering, polarization, etc.; wave length measurement; the Compton effect and related quantum phenomena.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Staff)

120 – X-RAY TECHNIQUE. An introductory lecture and laboratory course in X-ray technique. The course deals with operation of X-ray equipment, and practice in the radiography of the extremities, chest, head, teeth, etc.
Prerequisite: Physics 1b. (2) (Staff)

123a – HEAT AND THERMODYNAMICS. A lecture and problem course stressing some of the fundamental principles of heat phenomena, the laws of thermodynamics, equations of state for ideal and real gases, continuity, derivation of thermodynamic relations.
Prerequisites: Physics 3b and Mathematics 20b. (3) (Koppius)

123b – HEAT AND THERMODYNAMICS. A continuation of 123a, dealing with thermodynamic functions, thermodynamic equilibrium, the phase rule of phase equilibria, ionic equilibrium, electromotive force and free energy, surface phenomena, radiation.
Prerequisite: Physics 123a or equivalent. (3) (Koppius)

125a-d – INDEPENDENT WORK IN PHYSICS. (3 ea.) (Staff)

130 – EXPERIMENTAL PHYSICS: SPECTROSCOPY. An advanced laboratory course in the use and properties of various light sources, spectrographs, photographic materials, and photometric methods; analysis of unknown materials by spectrographic methods.
Prerequisite: Physics 110 or permission of instructor. (2) (Hanau)

131 — EXPERIMENTAL PHYSICS: ELECTRICITY AND MAGNETISM. An advanced laboratory course in electrical measurements. It includes calibration and use of the quadrant electrometer, the d'Arsonval galvanometer and the Type K Potentiometer; absolute determinations of electrical quantities.

Prerequisite (or to be taken concurrently): Physics 111 (2) (Kern)
or equivalent.

134 — EXPERIMENTAL PHYSICS: VACUUM TUBES. An advanced laboratory course dealing with the measurements of circuit and vacuum tube constants, and the experimental study of amplifiers, oscillators, plus generators, saw-tooth generators, etc.

Prerequisite or concurrent: Physics 114 or equivalent. (2) (Staff)

135 — EXPERIMENTAL PHYSICS: ATOMICS AND NUCLEONICS. An advanced laboratory course dealing with the methods of detecting and studying nuclear particles. Measurements will be made on half-lives, absorption coefficients, ranges, particle energies.

Prerequisite (or to be taken concurrently): Physics 155 (2) (Karn)
or equivalent.

137 — EXPERIMENTAL PHYSICS: HEAT. An advanced laboratory course in modern methods of measuring thermal quantities. Experiments include thermocouples, coefficients of expansion, vapor pressures, viscosity, surface tension, specific and latent heats, radiation constants.

Prerequisite (or to be taken concurrently): Physics 123a (2) (Koppius)
or equivalent.

138 — EXPERIMENTAL PHYSICS: LIGHT. An advanced laboratory course dealing with the properties of lenses, mirrors, prisms, gratings, and combinations of these elements in optical systems. The important phenomena of optics are studied experimentally.

Prerequisite: Physics 108 or permission of instructor. (2) (Hanau)

155a — FUNDAMENTAL ATOMIC AND NUCLEAR PHYSICS. A lecture and problem course stressing the fundamental principles of atomic and nuclear theory. Topics: atomic nature of matter; atomic and molecular structure; general laws of radioactivity.

Prerequisites: Physics 3b and Mathematics 20b. (3) (Hahn)

155b — FUNDAMENTAL ATOMIC AND NUCLEAR PHYSICS. A continuation of 155a in which a more detailed and more theoretical study of nuclear structure will be made. Topics: basic facts for nuclear theory, nuclear dynamics, and nuclear forces.

Prerequisite: Physics 155a or equivalent. (3) (Hahn)

205 — KINETIC THEORY OF MATTER. A course of lectures covering the classical kinetic theory of gases. Topics include the theorems of Clausius, Joule, Maxwell and Boltzmann; Brownian movements, development of equations of change of state.

Prerequisites: two "100" courses in physics and Mathematics 105a. (3) (Staff)

208 — MICROWAVES. A lecture and problem course reviewing electromagnetic wave theory with emphasis on solutions of Maxwell's wave equations and their applications to the modern problems of microwave transmission.

Prerequisites: Physics 111; Mathematics 105a; (3) (Staff)
and Electrical Engineering 133 or equivalent.

210 – ELECTRODYNAMICS. A lecture course treating the subject from the point of view of relativity and the electron theory. The course will end with a short preview of quantum electrodynamics.

Prerequisites: Physics 111 and Mathematics 105a. (3) (Staff)

212 – CONDUCTION OF ELECTRICITY THROUGH GASES. A lecture course covering the basic phenomena of electrical discharge in gases at low pressures. Topics include the formation of ions, their mobility, diffusion, and recombination; representative discharges.

Prerequisites: Physics 111, and either 110 or 155a; and Mathematics 105a. (3) (Staff)

213 – ELECTROMAGNETIC THEORY. A lecture course dealing with the application of classical electromagnetic theory to the optical phenomena of reflection, refraction, polarization, and absorption.

Prerequisites: Physics 111 and 108; and Mathematics 105a. (3) (Hanau)

214 – TRANSIENT ELECTRIC AND VACUUM TUBE PHENOMENA. A lecture course dealing with transient currents in circuits containing variable amounts of inductance, capacitance, and resistance. Both the methods of differential equations and of the Laplace transform are used.

Prerequisites: Physics 111 or 114; and Mathematics 105a. (3) (Staff)

215a – QUANTUM THEORY. A lecture course covering a brief review of the origin of quantum theories, mathematical techniques of quantum mechanics, the general aspects of wave mechanics and matrix mechanics, the uncertainty principle.

Prerequisite: Physics 217b or equivalent. (3) (Hahn)

215b – QUANTUM THEORY. A continuation of 215a with extensions into special methods of solving problems in the theory, problems in more than one dimension, and the Pauli and Dirac theories of the electron.

Prerequisite: Physics 215a or equivalent. (3) (Hahn)

217a – THEORETICAL PHYSICS. A course of lectures presenting the basic aspects of theoretical physics in a unified way. Representative topics: advanced dynamics, hydrodynamics, elasticity.

Prerequisites: two "100" courses in physics; and Mathematics 105a. (4) (Hahn)

217b – THEORETICAL PHYSICS. A continuation of 217a, dealing with statistical mechanics, thermodynamics, electrodynamics, relativity, quantum theory.

Prerequisite: Physics 217a or equivalent. (4) (Hahn)

218 – THERMODYNAMICS. A review of the two classical laws of thermodynamics and their dynamical and statistical mechanical support; Nernst's heat theorem; applications of classical thermodynamics to important problems, relativity thermodynamics.

Prerequisites: Physics 123a, b; and Mathematics 105a. (3) (Webb)

220a-h – SEMINAR. A weekly meeting of the staff and graduate students of the department for presentation and discussion of recent developments in physics and of work in progress in the department.

(1 ea.) (Senior Staff)

224 — ADVANCED X-RAYS AND CRYSTAL ANALYSIS. A lecture course dealing with the theories of production, scattering, and absorption of X-rays; the interpretation of X-ray spectra; the analysis of crystals; the experimental techniques of X-ray measurements.

Prerequisite: Physics 119.

(3) (Staff)

226a, b — RESEARCH IN PHYSICS.

(3 ea.) (Senior Staff)

227a, b — RESEARCH IN PHYSICS.

(5 ea.) (Senior Staff)

250 — RELATIVITY. A lecture course dealing with the special and general theories of relativity. The application of the theories to mechanics, electricity and magnetism, and other fields is considered.

Prerequisites: Physics 104 and 111; and Mathematics 105.

(3) (Webb)

500-1, 2, 3 — THESIS. This course is intended for graduate students who are prepared to undertake special problems. Except in the case of a purely mathematical problem the entire time is to be devoted to work in the laboratory.

(0) (Senior Staff)

V. AGRICULTURE

AGRICULTURAL EDUCATION (See Education)

AGRICULTURAL ENTOMOLOGY

102 — ECONOMIC ENTOMOLOGY. For those interested in agricultural teaching and extension work. Life history, control, and means of identification of economic insects of Kentucky are considered. Lectures, 2 hours; lab, 2 hours.
(3) S (Townsend)

103 — ECONOMIC ENTOMOLOGY. Fruit and garden insects. Life histories, habits, distribution, and control of insects, injurious to fruits and vegetables, with attention to those found in Kentucky. The enemies of these species are considered. Lectures, 2 hours; lab, 2 hours.
Prerequisite: A. E. 1. (3) I (Townsend)

104 — ECONOMIC ENTOMOLOGY. Farm crop insects and animal parasites. Life histories, habits, distribution, and control of insects injurious to common farm crops; also insect parasites of farm animals. Enemies of these injurious species are considered. Lectures, 2 hours; lab, 2 hours.
Prerequisite: A. E. 1. (3) II (Townsend)

105a, b — SYSTEMATIC AND TECHNICAL AGRICULTURAL ENTOMOLOGY. Insect physiology, anatomy, ecology, and taxonomy, entomological literature and technique; studies of special groups of insects.
Prerequisites: A. E. 1, and any one of the following: 102, 103, 104. (3) I, II (Townsend)

201a, b — ENTOMOLOGICAL PROBLEMS. Investigations of chosen insect problems, including original work. Discussion and assignment of current insect subjects.
Prerequisites: A. E. 1, 103, 104, and 105a, b. (3) I, II (Price)

AGRICULTURAL EXTENSION

101 — METHODS IN AGRICULTURAL EXTENSION. Methods in extension work in agriculture and home economics; legislative background, organizing the working forces; administration, financing; cooperating agencies, relationships, effective programs of work. Lecture, one hour.
(1) II (Bryant)

AGRONOMY

COURSES IN CROPS

102 — FIELD CROP ECOLOGY. A study of the environmental factors affecting the yield and quality of field crops. Lectures and recitation, 3 hours.
Prerequisites: Agr. 1; and Bot. 1. (3) I, S (Phillippe)

103 — WEEDS. The important characteristics, identification, and control of weeds, with emphasis on identification and control of Kentucky weeds. Lecture and discussion, 2 hours.
Prerequisite: Bot. 1. (2) II, S (Phillippe)

104 — ADVANCED CROPS: FORAGE CROPS. A comprehensive study of forage crops with special emphasis upon their production in Kentucky. Lectures, 3 hours.

Prerequisites: Agr. 1; and Bot. 1.

(3) I, S (Fergus)

105 — ADVANCED CROPS: TOBACCO AND CEREALS. Tobacco and the important cereal crops are studied in considerable detail as regards distribution, soil, and climatic adaptation, and technique of production. Lectures, 3 hours.

Prerequisites: Agr. 1; and Bot. 1.

(3) II, S (Kinney)

106 — FIELD CROP IMPROVEMENT. A study of the principles involved and the technique used in breeding crop plants. Lectures, 3 hours.

Prerequisites: Bot. 1; Agr. 1; and A. I. 61.

(3) II

109a-c — SPECIAL PROBLEMS IN CROPS. Intensive studies of specific crop problems.

Prerequisites: Agron. 1 and approval of instructor. (3 ea.) I, II, S (Staff)

200a-d — AGRONOMY SEMINAR.

(1 ea.) I, II (Staff)

204a, b — SPECIAL PROBLEMS IN PRODUCTION OF FORAGE CROPS. Intensive studies of research relative to particular problems in forage crop production.

Prerequisite: approval of instructor. (3 ea.) II, S (Fergus and Phillippe)

205a, b — SPECIAL PROBLEMS IN PRODUCTION OF TOBACCO OR CEREALS.

Prerequisite: approval of instructor.

(3) II, S (Kinney)

COURSES IN SOILS

110 — SOIL BIOLOGY. A study of soil organisms and biological soil processes in relation to soil productivity. Lecture, 2 hour; lab, 2 hours.

Prerequisites: Agr. 10; and Bact. 52.

(3) I

111 — SOIL CONSERVATION. The scope and nature of the soil conservation problem, and the application of soil conserving methods to the planning and management of farms. Lecture and recitation, 2 hours; lab, 2 hours.

Prerequisite: Agron. 10.

(2) I, II (Survant)

112a-d — SPECIAL PROBLEMS IN SOILS. Intensive studies of specific soil problems.

Prerequisites: Agr. 10 and approval of instructor. (3) I, II, S (Karraker and Survant)

113 — EXPERIMENTAL METHODS AND INTERPRETATION OF RESULTS. A study of the essentials of reliable experimentation, including sources of error; a study of experimental data with emphasis on interpretation.

Prerequisite: Agr. 10.

(3) II (Roberts)

114 — FERTILIZERS AND SOIL MANAGEMENT. Sources, manufacture, evaluation, and use of fertilizers and lime materials; soil moisture, tillage and soil organic matter and nitrogen. Lectures and recitations, 3 hours.

Prerequisite: Agr. 10.

(3) II (Karraker)

119 — SOIL ORIGIN, CLASSIFICATION AND MAPPING. A study of the origin, nature, classification, and mapping of soils. Lecture, recitation, and field work, 3 hours.

Prerequisite: Agron. 10.

(3) II (Karraker)

200a-d — AGRONOMY SEMINAR.

(1) I, II (Agronomy Staff)

212a-d — RESEARCH IN SOILS.

Prerequisite: approval of instructors.

(3) I, II, S (Weeks, Karraker)

COURSES IN PLANT PATHOLOGY

123a-c — SPECIAL PROBLEMS IN PLANT PATHOLOGY.

Prerequisite: Agron. 23.

(3) (Diachun)

200a-d — AGRONOMY SEMINAR.

(1) I, II (Agronomy Staff)

ANIMAL INDUSTRY

COURSES IN ANIMAL HUSBANDRY

100 — ANIMAL BREEDING. History of animal improvement; survey of hereditary traits in livestock; inbreeding and outcrossing; progeny tests and herd analysis. Lecture, 3 hours.

Prerequisites: A. I. and 61.

(3) II (Steele)

102 — ADVANCED LIVESTOCK JUDGING. Primarily for judging team candidates. Open only to those who have made good standings in the prerequisite courses. Lab, 6 hours.

Prerequisites: A. I. and 2; and approval of instructor.

(3) I (French)

103 — WORK STOCK PRODUCTION. History and importance of the horse and mule industry; selection, breeding, feeding, and management of horses and mules. Lecture, 2 hours; lab, 2 hours.

Prerequisites: A. I. and 81.

(3) I

104 — SHEEP PRODUCTION. History and importance of the sheep industry; selection, breeding, feeding, and management of sheep; production and handling of wool. Lecture, 2 hours; lab, 2 hours.

Prerequisites: A. I. 1 and 81.

(3) II (Woolfolk)

105 — BEEF PRODUCTION. History and importance of the beef cattle industry; selection, breeding, feeding and management of beef cattle. Lecture, 2 hours; lab, 2 hours.

Prerequisites: A. I. 1 and 81.

(3) II (Garrigus)

106 — PORK PRODUCTION. History and importance of the swine industry; selection, breeding, feeding, and management of swine. Lecture, 2 hours; lab, 2 hours.

Prerequisites: A. I. 1 and 81.

(3) I, II (Barnhart)

108 — MEAT JUDGING. Intensive instruction in the evaluation of carcasses and cuts of beef, veal, pork, and lamb. Lab, 2 hours.

Prerequisite: A. I. 6.

(1) I (Wilford)

109a-c — SPECIAL PROBLEMS IN ANIMAL HUSBANDRY. Approval of instructor required. (3) I, II, S (Animal Husbandry Staff)

200a-c — ANIMAL INDUSTRY SEMINAR. (1) I, II (Staff)

201a-c — RESEARCH IN MEATS. Problems involving original investigation. (3) I, II, S (Wilford)

203a-c — RESEARCH IN HORSE HUSBANDRY. Problems involving original investigation. (3) I, II, S

204a-c — RESEARCH IN SHEEP HUSBANDRY. Problems involving original investigation. (3) I, II, S (Woolfolk)

205a-c — RESEARCH IN BEEF CATTLE HUSBANDRY. Problems involving original investigation. (3) I, II, S (Garrigus)

206a-c — RESEARCH IN SWINE HUSBANDRY. Problems involving original investigation. (3) I, II, S (Barnhart)

500-1, 2, 3 — THESIS. (0) (Staff)

COURSES IN DAIRYING

120 — DAIRY CATTLE BREEDING. Application of genetics to problems of breed and herd improvement; progeny testing of sires; type classification, selective registration; prominent families and strains within the leading dairy breeds. Lecture, 2 hours; lab, 2 hours.
Prerequisite: A. I. 61.

(3) II (Seath)

121 — DAIRY CATTLE FEEDING AND MANAGEMENT. Application of principles of nutrition to dairy cattle feeding; current methods contributing to maximum efficiency in the production of quality dairy products on the farm. Lecture, 2 hours; lab, 2 hours.

122 — ADVANCED DAIRY CATTLE JUDGING. Primarily for judging team candidates. Open only to those who have made good standings in the prerequisite courses. Lectures and lab.

Prerequisites: A. I. 21 and 23.

(3) I (Seath)

123 — DAIRY BACTERIOLOGY. Application of bacteriological principles to the production and processing of dairy products, entrance of micro-organisms into dairy products, effects of their growth and methods for control. Lectures, 2 hours.

Prerequisite: Bact. 52 or 102.

(2) I (Morrison)

124 — DAIRY BACTERIOLOGY LABORATORY. Laboratory to accompany A. I. 123, Dairy Bacteriology. Lab, 4 hours.

Prerequisite or concurrent: A. I. 123.

(2) I (Morrison)

125 — BUTTER AND ICE CREAM. The principles involved in the commercial manufacture, handling, and storage of butter and ice cream. Lecture, 3 hours; lab, 6 hours.

Prerequisite: A. I. 21.

(5) I (Barkman)

127 — SURVEY OF DAIRY INDUSTRY. Same as A. I. 27 except that graduate students will be given additional assignments.

(3) S (Staff)

128 — TECHNICAL CONTROL OF DAIRY PRODUCTS. Various chemical and bacteriological tests used in the control of production or processing of dairy products. Lab. and recitation, 6 hours.

Prerequisites: A. I. 21, 123 and 124. (3) II (Morrison and Freeman)

129a-f — SPECIAL PROBLEMS IN DAIRYING. Approval of instructor required. (3) I, II, S (Dairy Staff)

130 — MARKET MILK. A study of problems concerning the production and processing of market milk and its related products. Lecture, 2 hours; lab, 3 hours.

Prerequisite: A. I. 21. (3) II (Morrison)

131 — CHEESE-MAKING. A study of problems and practices in the manufacture and ripening of cheddar and other common types of cheese. Lecture, 2 hours; lab, 3 hours.

Prerequisite: A. I. 21. (3) II (Freeman)

132 — REPRODUCTION IN DAIRY CATTLE. A study of male and female reproductive processes in dairy cattle and the application of artificial breeding to the improvement of dairy herds. Lecture, 1 hour lab, 2 hours.

(2) II (Olds)

139a-d — DAIRY SEMINAR. Open to seniors and graduate students.

(1) II (Dairy Staff)

221a-c — RESEARCH IN DAIRYING. Problems involving original investigation in either dairy production or dairy manufacturing.

(3) I, II, S (Dairy Staff)

See also A. I. 200, Animal Industry Seminar.

500-1, 2, 3 — THESIS.

(0) (Staff)

COURSES IN POULTRY HUSBANDRY

140 — POULTRY BREEDING. Genetic principles involved in poultry breeding; disease resistance; inheritance of egg production and related characters; development of breeding programs. Lecture, 3 hours.

Prerequisites: A. I. 41 and 61. (3) I (Wightman)

141 — ADVANCED POULTRY PRODUCTION. Studies of control measures in poultry diseases, nutrition, marketing; flock management and replacement. Lecture, 2 hours; lab. and dem., 2 hours.

Prerequisite: A. I. 41. (3) I (Wightman)

142 — MARKETING AND PROCESSING POULTRY PRODUCTS. Organization and functioning of markets; grading, packaging, and handling poultry and eggs. Lecture, 1 hour; lab, 2 hours.

Prerequisites: A. I. 41; and M. & R. F. (2) I (Wightman and Roberts)

100. Same course as M. & R. F. 142.

145 — ADVANCED POULTRY JUDGING. Primarily for judging team candidates. Open only to those who have made good standings in the prerequisite courses. Lecture, 1 hour; lab, 4 hours.

Prerequisites: A. I. 41 and 44. (3) I (Wightman)

146 — A SURVEY OF THE POULTRY INDUSTRY. Same as A. I. 46 except that graduate students will be given additional assignments.

(3) S (Staff)

149a-c — SPECIAL PROBLEMS IN POULTRY.

Prerequisite: permission of instructor.

(3) I, II, S (Wightman)

241a-c — RESEARCH IN POULTRY. Problems involving original investigation.

(3) I, II, S (Wightman)

See also A. I. 200, Animal Industry Seminar.

500-1, 2, 3 — THESIS.

(0) (Staff)

COURSES IN GENETICS

161 — GENETICS. Lectures of A. I. 61 and assigned readings. Primarily for graduate students. Lecture, 3 hours.

Prerequisite: one course in biology.

(3) I, II, S (Steele)

162 — GENETICS LABORATORY. Similar to A. I. 62 but additional work required. Primarily for graduate students. Lab, 2 hours. Concurrently with A. I. 161, at student's option.

(1) I, II (Steele)

163 — ADVANCED GENETICS. Concerned chiefly with the physical basis of heredity, mutations, chromosomal aberrations, linkage, genetics and development, and reports on current literature. Lecture, 3 hours.

Prerequisite: A. I. 61.

(3) II (Steele)

169a-c — SPECIAL PROBLEMS IN GENETICS. Approval of instructor required.

(3) I, II, S (Steele)

261a-c — RESEARCH IN GENETICS. Problems involving original investigation.

(3) I, II, S (Steele)

See also A. I. 100, Animal Breeding; A. I. 120, Dairy Cattle Breeding; A. I. 140, Poultry Breeding; and A. I. 200, Animal Industry Seminar.

500-1, 2, 3 — THESIS.

(0) (Staff)

COURSES IN ANIMAL NUTRITION

281 — ANIMAL NUTRITION. The chemistry and physiology of animal nutrition and the nutritive requirements for growth, fattening, reproduction, lactation and other body functions. Lecture, 3 hours.

Prerequisite: Chem. 37 or equivalent.

(3) I (Thomas)

282 — LABORATORY METHODS IN ANIMAL NUTRITION. The use laboratory techniques and equipment in the solution of fundamental problems of nutrition. Lecture and recitation, 1 hour; laboratory, 4 hours.

Prerequisite or concurrent: A. I. 281.

(3) I (Thomas)

283 — ADVANCED ANIMAL NUTRITION. History and development of nutritional theories and techniques; a critical review of current literature. Lecture and recitation, 3 hours.

Prerequisite: A. I. 281.

(3) II (Thomas)

See also A. I. 200, Animal Industry Seminar.

284a-c — RESEARCH IN ANIMAL NUTRITION. Problems involving original investigation.

(3) I, II, S (Thomas)

289a-c — SPECIAL PROBLEMS IN ANIMAL NUTRITION. Approval of instructor required. (3) I, II, S (Thomas)

500-1, 2, 3 — THESIS. (0) (Thomas)

ANIMAL PATHOLOGY

101 — ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS. A study of anatomy and physiology as related to courses in livestock judging, nutrition, butchering, breeding, and infectious diseases. Lectures, 3 hours. (3) I (Brown)

102 — INFECTIOUS DISEASES OF DOMESTIC ANIMALS. Distribution, general nature, manner of dissemination, method of control, prevention and eradication of infectious and parasitic diseases of animals. Lecture, 3 hours. *Prerequisites:* A. P. 51. (3) II (Hull, Brown)

104a, b — SPECIAL PROBLEMS IN ANIMAL PATHOLOGY. *Prerequisites:* A. P. 51, 101, and 102, (3) I, II (Hull, Brown)
and approval of instructor.

201a, b — INVESTIGATIONS IN ANIMAL DISEASES. This course is open only to persons who have a degree in veterinary medicine. (3) I, II (Hull, Brown)

ECONOMIC AND SOCIAL ASPECTS OF AGRICULTURE

Courses are offered in the fields of agricultural economics and of rural sociology leading to the degrees of Master of Science, Master of Science in Agriculture and Doctor of Philosophy. Courses in the Department of Farm Economics, the Department of Markets and Rural Finance and the Department of Rural Sociology will be included in the major requirements for these degrees with consent of the major advisor.

ECONOMIC ASPECTS OF AGRICULTURE

Courses are offered in the fields of agricultural economics and of markets leading to the degrees of Master of Science, Master of Science in Agriculture and Doctor of Philosophy. Courses in the Department of Farm Economics, the Department of Markets and Rural Finance will be included in the major requirements for these degrees with consent of the major advisor.

FARM ECONOMICS

110 — FARM MANAGEMENT. A study of organizing and managing farms. Factors affecting farm earnings. Individual farm organization and farm management problem assignments assist students in learning to apply the principles of business to farms. *Prerequisite:* F. E. 1. (3) I, II, S (Bradford)

111 — ADVANCED FARM MANAGEMENT. Advanced managerial concepts will be developed and applied in handling the problems of adjusting farms to changing economic, weather and technical events, and studying the elements of farm management research. *Prerequisite:* F. E. 110. (3) I (Johnson)

112a-c — SPECIAL PROBLEMS IN FARM ECONOMICS. Students are assigned a special problem in the field of farm economics.

Prerequisites: F. E. 110 and (3 ea.) I, II, S (Nicholls)
approval of instructor.

113 — TYPES AND SYSTEMS OF FARMING. A critical study of the business organization and management of successful Kentucky farm businesses. Various systems of farming are given emphasis. Field trips required.

Prerequisites: F. E. 110 and *approval of instructor.* (3) II (Nicholls)

115 — FARM ACCOUNTING. A study of farm records and farm accounts including farm cost accounting.

Prerequisite: F. E. 110. (3) II (Bradford)

120 — LAND ECONOMICS. Emphasizes the economic, institutional, and technological forces affecting the present and potential needs and productivity of natural resources in agriculture.

Prerequisite: F. E. 1 or *approval of instructor.* (3) II (Redman)

121 — LAND-USE PLANNING. Critical study of public land policies, planning, private and social ends of land use, and resource-use adjustments in agriculture in relation to other sectors of the economy.

Prerequisite: F. E. 120 or *approval of instructor.* (3) II (Redman)

122 — LAND VALUE AND APPRAISAL. The capitalization process, and other devices for valuing farm land; appraisal procedures of the Federal Land Banks and of other credit institutions.

Prerequisite: F. E. 120 or *approval of instructor.* (3) II (Nicholls)

130 — PRODUCTION ECONOMICS. Economic analysis of agricultural production. A theoretical treatment of land rents, land returns, capital returns, costs and similar functions of agricultural production.

Prerequisite: F. E. 110. (3) I, S (Bradford)

200a-d — AGRICULTURAL ECONOMICS SEMINAR. Discussions and papers on methods, problems, current literature and research in the field of agricultural economics. Required of graduate students in the department.

(1) I, II (Staff)

201a-d — RESEARCH IN FARM ECONOMICS. Assignment of an advanced problem in the field of farm economics. Stress is placed on the plan, technique, and scientific method used by the student in developing his research.

Prerequisite: *approval of instructor.* (3 ea.) I, II, S (Nicholls and Staff)

202a, b — ECONOMICS OF PRODUCTION AS APPLIED TO AGRICULTURE. Application of production economics to questions of combining the agents of production, scale, combining enterprise, the role of management, interregional competition and national agricultural policies and programs.

Prerequisite: *approval of instructor.* (3 ea.) I, II (Johnson)

203 — COST, PRICE, AND PRODUCTION RELATIONSHIPS IN AGRICULTURE. Will acquaint the student with data (and their use) on production expenses, cost of production, prices paid, prices received, agricultural production, farm income and relevant non-farm subjects.

Prerequisite: *approval of instructor.* (3) II, S (Johnson)

204 — RESEARCH METHODS IN FARM ECONOMICS. An analytical examination of research methods and techniques used in farm economics research.

Prerequisites: F. E. 110, and approval of instructor. (3) II (Johnson)

FARM ENGINEERING

101a-c — SPECIAL PROBLEMS. This course is designed to permit advanced students to make an intensive study of some phase of agricultural engineering in which they are particularly interested.

Prerequisite: approval of instructor. (2) I, II, S (Staff)

102 — DAIRY ENGINEERING. Engineering principles involved in the construction, operation, and management of machinery and equipment used in processing dairy products. Lecture, 2 hours. (2) II (Kelley)

104 — RURAL ELECTRIFICATION. Designed to give students information on how to obtain electric service and on the problems involved in selecting and using farm and home electrical equipment. Lecture, 2 hours. (2) II (Kelley)

105 — ENGINEERING PRACTICES IN WATER MANAGEMENT. Surveying, mapping, and determining areas of farm land; designing farm drainage systems; farm reservoirs; controlling water erosion with terraces and other mechanical structures. Lecture, 1 hour; lab, 4 hours.

(3) II (Kelley and Brooks)

HOME ECONOMICS

Courses in Foods and Nutrition

101 — PRINCIPLES OF NUTRITION. A non-technical course on the essentials of adequate diet for optimum health and on food plans to fit physiological, and environmental factors. Lecture and discussion, 3 hours. Not open to home economics majors. (3) II, S (Clemmons)

102 — DIETETICS. Daily food requirements at different age levels and different economic levels. Practice is given in setting up normal dietaries for individuals, families and other groups. Lecture, 2 hours; lab., 3 hours. *Prerequisites:* H. E. 6 and 11. (3) I, II, S (Clemmons)

103a, b — COMMUNITY NUTRITION. Study of nutrition education with emphasis on causes and effects of malnutrition, methods of judging nutrition and development of health programs in public schools. Lecture, 2 hours; lab., 2 hours.

Prerequisite (or to be taken concurrently): H. E. 102. (3) I, II, S (Clemmons)

105a-c — EXPERIMENTAL COOKERY. Study of factors that affect the results obtained in cooking and food preparation processes. Experimental work under controlled conditions. Lecture, 1 hour; lab., 4 hours. *Prerequisites:* Chem. 37, H. E. 5 or approval of instructor. (3) I, II, S (Freels)

106a-d — FIELD WORK IN NUTRITION. Nutrition problems at different age levels correlated with surveys and experimental studies to show the

relation between diet selection and its physical and mental effects. Lecture and lab.

Prerequisites: H. E. 103a, b,
or approval of instructor.

(1) I, II, S (Clemmons)

107 — WORKSHOP IN NUTRITION. This workshop gives opportunity to workers in the field of nutrition to obtain help in presenting community nutrition programs. The nutrition problem is analyzed in its relation to agricultural and socio-economic problems.

(4) Alternate S (Erikson)

108a-c — SEMINAR IN NUTRITION. Investigations of recent research in nutrition.

Prerequisite: senior or graduate standing.

(1) I, II (Erikson)

111 — ADVANCED NUTRITION. Application of biochemistry to understanding of the utilization of nutrients for body processes. Laboratory work includes analysis of digestive juices, blood and urine and balance experiments. Lecture, 2 hours; lab., 4 hours.

Prerequisite: H. E. 11.

(4) I (Erikson)

112 — NUTRITION IN DISEASE. Metabolic processes of the body in normal and diseased conditions, correlating the metabolic changes due to disease with diet therapy. Lecture, 2 hours; lab., 4 hours.

Prerequisites (or to be taken concurrently):
H. E. 102 and 111.

(4) I (Erikson)

114 — FOOD PRESERVATION. Principles of home food preservation. Canning, dehydration and freezing of fruits, vegetables and meats; pickling of fruits and vegetables; making of jams, jellies and preserves; brining.

Prerequisites: Bact. 52 and H. E. 5.

(3) II, S (Helton)

115 — FOOD FOR SPECIAL OCCASIONS. Advanced work in culinary arts and skills. Preparation of attractive and appetizing dishes to help the homemaker in planning buffet suppers, receptions, picnics, wedding parties, formal meals. Lab., 4 hours.

Prerequisites: H. E. 5 and 6.

(2) S (Barkley)

119a-c — SPECIAL PROBLEMS IN FOODS AND NUTRITION. Intensive work on a specific phase of the field.

Prerequisite: senior or graduate standing.

(2) I, II (Erikson and Clemmons)

206a-d — ADVANCED FIELD WORK IN NUTRITION. The course is a continuation of H. E. 106a-d with investigations of recent research in the field. Lecture and lab.

Prerequisites: H. E. 103 and 106a,
or approval of instructor.

(1) I, II, S (Clemmons)

208a-c — SEMINAR IN NUTRITION.

(2) I (Erikson)

219a-c — SPECIAL PROBLEMS IN FOODS AND NUTRITION. Independent advanced work on a specific problem.

(2) I, II (Erikson and Clemmons)

Courses in Clothing, Textiles, and Related Art

125 — ADVANCED TEXTILES. One class project in addition to individual semester reports. Lecture, 1 hour; lab., 2 hours.

Prerequisites: H. E. 25 and 161.

(2) I, S (Guenther)

126 — COSTUME DESIGN. The arts of costume today and throughout the past. Costumes are designed to meet today's needs. Lecture, 1 hour; lab., 4 hours.

Prerequisites: H. E. 27 and Art 30.

(3) I, S (Crumrine)

127 — ADVANCED CLOTHING. The making of foundation and creative pattern designs, also creative design through draping, with emphasis on accurate fittings. Lecture, 1 hour; lab., 4 hours.

Prerequisite: H. E. 27.

(3) I, II, S (Crumrine and Guenther)

128a-c — SPECIAL PROBLEMS IN CLOTHING AND COSTUME DESIGN. Intensive work on specific phases of the field.

Senior or graduate standing.

(2) I, II, S (Crumrine and Guenther)

129 — INTERIOR DECORATION. A study of color, line, and texture as used to create effective interiors suited to modern living. Lecture, 1 hour; lab., 4 hours.

Prerequisites: H. E. 25, 61; Art 30;

(3) II, S (Crumrine)

or approval of instructor.

130 — INTERIOR DECORATION PROJECTS. Selected projects in furnishing the home, including furniture refinishing, upholstering and slip cover making. Costs in terms of time and money are considered. Lab., 4 hours.

Prerequisite: H. E. 129.

(2) II, S (Allred)

134 — ECONOMICS OF CLOTHING. The clothing industry, its influence and economy. Field trips to study mass production, class project and individual semester reports. Lecture, 1 hour; lab., 2 hours.

Prerequisites: H. E. 127 and 161.

(2) II, S (Guenther)

135 — DECORATIVE TEXTILES — Survey of techniques used in applying color and design to fabrics. Individual problems, demonstrating techniques, developed. Lecture, 1 hour; lab, 2 hours.

Prerequisites: H. E. 25 and Art 30.

(2) II, S (Guenther)

136a-c — SPECIAL PROBLEMS IN TEXTILES. Intensive work on specific phases of the field. Senior or graduate standing.

(2) I, II, S (Guenther)

137 — TAILORING Analysis of tailoring technique in the shop and in the home. Tailored garments are planned and constructed. Lab., 4 hours.

Prerequisite: H. E. 127.

(2) I, S (Clothing Staff)

138a-c — SPECIAL PROBLEMS IN INTERIOR DECORATION. Intensive work on specific phases of the field.

Senior or graduate standing.

(2) I, II (Crumrine)

139 — ADVANCED INTERIOR DECORATION. The art of interior decoration throughout the past and today. Interiors are planned to meet today's needs. Lecture, 1 hour; lab., 2 hours.

Prerequisite: H. E. 129.

(2) II, S (Crumrine)

228a-c — SPECIAL PROBLEMS IN CLOTHING AND COSTUME DESIGN. Independent advanced work on a specific problem. Graduate standing.

(2) I, II, S (Crumrine and Guenther)

237a-c — SEMINAR IN TEXTILES, CLOTHING, COSTUME DESIGN AND INTERIOR DECORATION. Investigation of special textile, clothing,

costume design or interior decoration problems. Lecture, 2 hours.

(2) I, II (Crumrine and Guenther)

238a-c — SPECIAL PROBLEMS IN INTERIOR DECORATION. Independent, advanced work on a specific problem. (2) I, II, S (Crumrine)

Courses in Institution Management

140 — THE SCHOOL LUNCH. Designed for teachers who manage the lunchroom. Consideration will be given to equipment; menus, purchase, storage, preparation and service of food. Lecture, 2 hours; lab., 2 hours.

Prerequisites: H. E. 5 and Econ. 56.

(3) I, II, S (Helton)

141 — INSTITUTION ORGANIZATION AND MANAGEMENT. Principles of institution organization, types of institution service, personnel and financial management. Legal aspects of institution management. Personal and professional qualifications of an institution manager.

Prerequisites: H. E. 41 and 42.

(3) II (Helton)

142a-c — INSTITUTION ADMINISTRATION. Application of scientific principles of institution management. Practice is given in office management in different food units on the campus.

Prerequisite: H. E. 141.

(2) I, II, S (Helton)

143 — INSTITUTION EQUIPMENT. Selection, arrangement, cost and care of equipment. Problems of lighting, heating, ventilation and refrigeration. Two field trips taken to neighboring cities to see equipment in institutions.

Prerequisite: H. E. 42.

(3) II (Helton)

149a-c — SPECIAL PROBLEMS IN INSTITUTION MANAGEMENT. Intensive work on specific problems. Senior or graduate standing.

(2) I, II (Helton)

249a-c — SPECIAL PROBLEMS IN INSTITUTION MANAGEMENT. Independent, advanced work.

(2) I, II (Helton)

Courses in Child Development

150 — TECHNIQUES OF GUIDANCE FOR THE PRESCHOOL CHILD. An opportunity for extensive laboratory assistance in the nursery school for students who wish to develop skills in working with children. Lecture, 2 hours; lab., 4 hours.

Prerequisite: H. E. 152.

(4) II (Mumford)

152 — CHILD CARE AND DEVELOPMENT. Increased understanding of children through study of the normal development, care and guidance of the preschool child. Observation and participation in nursery school. Lecture, 2 hours; lab., 2 hours.

154 — FAMILY LIVING. A study of the influences which bear upon the home and family with emphasis on preparation for successful marriage and parenthood. Lecture, four hours and occasional field trips.

(4) I, II, S (Mumford)

155 — THE CHILD AND HIS CLOTHING. A detailed study of the selection, cost and care of the preschool child's clothing in relation to his needs. Lectures and occasional field trips.

Prerequisite: H. E. 52.

(3) S (Mumford and Clothing Staff)

156 – PLAY AND PLAY MATERIALS. Play activities of young children, relation of play equipment to development and characteristics of good play materials. Toys suitable for the preschool child. Lecture, 1 hour; lab., 2 hours. (2) S (Bentley)

157 – INFANT DEVELOPMENT. Study of development, care and guidance of the child during prenatal, natal, and infant periods. Lecture, 2 hours. *Prerequisite:* A. & P. 5. (2) S (Bentley)

158 – FOOD FOR CHILDREN. Experience in selection, preparation and serving of food to preschool children with detailed observation of their eating habits during the meal. *Prerequisites:* H. E. 6, 11 and 52. (3) II, S (Nutrition Staff and Mumford)

159a-c – SPECIAL PROBLEMS IN CHILD DEVELOPMENT AND FAMILY LIVING. Intensive work on specific problems. Senior or graduate standing. (2) I, II (Mumford and Bentley)

259a-c – SPECIAL PROBLEMS IN CHILD DEVELOPMENT AND FAMILY LIVING. Independent advanced work. (2) I, II (Mumford)

Courses in Home Management

161 – CONSUMER PROBLEMS. Consumer buying, its social and economic aspects. An analysis of problems of the manufacturer, merchant and consumer in order to understand the needs and responsibilities of each group. Lecture, 3 hours. *Prerequisites:* Econ. 51; and H. E. 61. (3) II, S (Wilmore)

162a – HOME MANAGEMENT AND FAMILY RELATIONSHIPS. Philosophy and principles of home management. Study of the mechanics of time, energy and money management, personal development, social and family relationships. Lecture, 2 hours. *Prerequisites:* Econ. 51; and H. E. 61. (2) I, II, S (Wilmore)

162b – HOME MANAGEMENT AND FAMILY RELATIONSHIPS. A residence period in the Home Management House is required of seniors in home economics. Experience in the application of principles presented in other courses. *Prerequisite:* H. E. 162a; *prerequisite or concurrent,* H. E. 102. (3) I, II, S (Wilmore)

169a-c – SPECIAL PROBLEMS IN HOME MANAGEMENT. Intensive work on specific phases of home management. Senior or graduate standing. (2) I, II (Wilmore)

262 – ADVANCED HOME MANAGEMENT AND FAMILY RELATIONSHIPS. A course affording opportunity for special study of social and economic problems affecting family life. Lecture, 3 hours. *Prerequisite:* H. E. 162b. (3) II (Wilmore)

269a-c – SPECIAL PROBLEMS IN HOME MANAGEMENT. Independent advanced work. (2) I, II (Wilmore)

General Courses

175 – RURAL COMMUNITY ANALYSIS. The nature of the town-country community, with special emphasis on the function of institutional and agency

programs and their leaders in relation to the community. Same course as R. S. 160.

(3) I, II (Bauder)

HOME ECONOMICS EDUCATION (See Education)

HORTICULTURE

102 — PRINCIPLES OF SPRAY PRACTICE. A study of the principles and practice of spraying for the control of pests of horticultural crops. Lecture, 1 hour; lab., 2 hours.

Prerequisites: Hort. 1; Chem. 4a; and Agr. Ent. 1. (2) I (Waltman)

103 — POMOLOGY. Pome Fruits. A course dealing with the theory and practice of commercial pome fruit production, with major emphasis on apple growing. Lectures, 2 hours; lab., 2 hours.

Prerequisite: Hort. 1. (3) I (Waltman)

104 — POMOLOGY. Stone Fruits. A detailed study of commercial peach, plum and cherry growing, with special emphasis on peach production. Lecture, 2 hours; lab., 2 hours.

Prerequisite: Hort. 1. (3) I (Waltman)

105 — POMOLOGY. Small Fruits. A detailed study of the care and management of commercial plantings of strawberries, raspberries, and other bush fruits. Lectures, 1 hour; lab., 2 hours, first half; lectures, 2 hours, last half.

Prerequisite: Hort. 1. (2) I (Waltman)

106a-c — SPECIAL PROBLEMS IN POMOLOGY. This course is designed to meet the need for advanced work.

Prerequisites: Hort. 1, 103, 104, 105, (3) I, II, S (Waltman)
and approval of instructor.

110 — PRINCIPLES OF VEGETABLE GARDENING. A study of fundamental principles underlying commercial production of vegetables. Lectures, 2 hours; lab., 2 hours.

Prerequisites: Hort. 1; and Agron. 10. (3) I (Emmert)

111 — GROWING VEGETABLE PLANTS UNDER GLASS. Production of vegetable plants grown for transplanting; types of hotbeds, cold frames, and simple greenhouse structures. Lectures, 2 hours; lab., 2 hours.

Prerequisite: Hort. 110. (3) I (Emmert)

112a-c — SPECIAL PROBLEMS IN VEGETABLE CROPS. This course is designed to meet the need for advanced work.

Prerequisites: Hort. 1, 110; (3) I, II, S (Emmert)
and approval of instructor.

120 — LANDSCAPE GARDENING. Principles of landscape architecture; coordination of buildings with surroundings; identification and uses of decorative materials and their requirements. Lectures, 2 hours; lab., 2 hours.

Prerequisites: Hort. 1; Bot. 1, 2. (3) II, S (Elliott)

121 — ADVANCED LANDSCAPE. A continuation of Horticulture 120, with special emphasis on design and use of materials. Lectures, 2 hours; lab., 2 hours.

Prerequisite: Hort. 120. (3) II (Elliott)

122 — FLORICULTURE. A detailed study of specific groups of flowers such as bulbs, iris, and roses. Lectures, 2 hours.

Prerequisite: Hort. 22.

(2) II (Elliott)

123 — PLANT PROPAGATION. A detailed study of the methods of propagating certain horticultural plants. Includes, cuttings, grafting, and budding. Lectures, 2 hours; lab., 2 hours.

Prerequisites: Hort. 1, 120; Bot. 1, 2.

(3) II (Elliott)

124a-d — SPECIAL PROBLEMS IN ORNAMENTAL HORTICULTURE. This course is designed to meet the need for advanced work.

Prerequisites: Hort. 1, 120, 121;

(3) I, II, S (Elliott)

Bot. 1, 2; and approval of instructor.

125 — PLANTS AND PLANTING MATERIALS. A study of woody and herbaceous plants, their identification, suitability for landscape uses and the effects produced. Lectures, 1 hour; lab., 2 hours. Offered 1951 and on alternate years.

Prerequisite: Hort. 120 or approval of instructor.

(2) II (Elliott)

200a-c — SEMINAR.

(1) I, II, S (Olney and Staff)

201a-c — RESEARCH IN HORTICULTURE.

Prerequisite: approval of instructor.

(3) I, II, S (Olney and Staff)

FORESTRY

110 — WOOD IDENTIFICATION AND TECHNOLOGY. General anatomy of wood, identification of commercial species based on gross and microscopic features. Properties and uses. Lectures, 2 hours; lab., 2 hours.

Prerequisites: For. 1 or 2; Bot. 1;

(3) II (Davenport)

and approval of instructor.

111 — LUMBER AND OTHER FOREST PRODUCTS. Manufacture, grading, and seasoning of lumber. Forest products other than logs or lumber, their methods of utilization and markets. Lectures, 3 hours.

Prerequisites: For. 1 or 2 and approval of instructor.

(3) II (Davenport)

120a-c — SPECIAL PROBLEMS IN FORESTRY. This course is designed to meet the need for advanced work.

Prerequisites: For. 110 and 111

(3) I, II, S (Davenport)

and approval of instructor.

MARKETS AND RURAL FINANCE

100 — AGRICULTURAL MARKETING. Principles and methods of marketing farm products with attention to systems and agencies at both country and central markets.

Prerequisite: Econ. 51.

(3) I, II, S (Brown, Clark, and Vennes)

101 — COOPERATIVE MARKETING. Principles, methods, and problems involved in the cooperative marketing of farm products, and in the purchase of farm production supplies through cooperatives. Lecture and recitation, 3 hours.

Prerequisite: M. & R. F. 100.

(3) I (Vennes)

102a — MARKETING TOBACCO AND OTHER FARM CROPS. Special emphasis on the marketing of and the market system for tobacco; some attention given to grain marketing.

Prerequisite: M. & R. F. 100.

(2) II, S (Clark)

102b — MARKETING TOBACCO AND OTHER FARM CROPS. Procedures and problems in establishing market standards with special emphasis on tobacco, including practice in grading.

Prerequisite or concurrent: M. & R. F. 102a
or approval of instructor.

(1) S (Clark)

103 — MARKETING LIVESTOCK AND LIVESTOCK PRODUCTS. Analysis of livestock and dairy markets, market organization, market agencies, market institutions, market services and public regulation.

Prerequisite: M. & R. F. 100.

(2) II (Brown)

110 — AGRICULTURAL PRICES. Price behavior of agricultural products over time; supply-price relationships; relation of agriculture to general price level.

Prerequisite: Farm Econ. 1.

(3) I (Card, Vennes)

120 — AGRICULTURAL FINANCE. Credit needs of agriculture; problems connected with farm and market agency financing; organization and operation of agricultural credit agencies.

Prerequisite: Farm Econ. 1.

(2) II (Card)

130 — AGRICULTURAL STATISTICS. Principles and methods involved in the analysis, interpretation, and use of agricultural statistics; including variation, correlation, standard errors, and simple analysis of variance.

(3) I (Card)

140 — AGRICULTURAL POLICY. Development of principles underlying agricultural policy, objectives of agricultural policy, appraisal of current and proposed agricultural programs.

Prerequisite: M. & R. F. 100.

(3) II (Price)

142 — MARKETING AND PROCESSING POULTRY PRODUCTS. Organization and functioning of markets and handling poultry and eggs. Lecture, 1 hour; lab., 2 hours.

Prerequisites: A. I. 41; and M. & R. F. 100. (2) I (Roberts, Wightman)
(This is same course as A. I. 142.)

200a-c — AGRICULTURAL ECONOMICS SEMINAR. Analysis of current problems in the field of marketing and rural finance.

(1) I, II (Brown and Staff)

202a-c — SPECIAL PROBLEMS IN MARKETING AND RURAL FINANCE. Open to graduate students who have the necessary training and ability to do research on some selected problem.

Prerequisite: approval of
head of department.

(3) I, II, S (Brown and Staff)

204 — RESEARCH IN MARKETING. A critical examination of methods, objectives and results in various types of research in marketing organization, marketing functions and market management.

Prerequisite: M. & R. F. 100.

(3) II (Price)

210 — THEORY OF AGRICULTURAL PRICES. Advanced study of agricultural price behavior by the application of economic theory and statistical analysis to this field.

Prerequisite: M. & R. F. 110 or approval of instructor. (3) I (Brown)

230a — STATISTICS FOR AGRICULTURAL RESEARCH: SOCIAL SCIENCES. Theory and practice of sampling methods in agricultural research: multiple, partial, and joint correlation: tests of reliability; and agricultural index numbers.

Prerequisite: M. & R. F. 130 or equivalent. (3) II (Card)

230b — STATISTICS FOR AGRICULTURAL RESEARCH: PLANT AND ANIMAL SCIENCES. Analysis of variance and covariance; statistical considerations in the design of experiments; tests of significance and confidence limits.

Prerequisite: M. & R. F. 130 or equivalent. (2) II (Card)

RURAL SOCIOLOGY

115 — ORGANIZATION OF RURAL GROUPS. A study of the dynamics of organized groups; leadership, membership participation, and program planning in agricultural organizations and other organized rural groups.

Prerequisite: an introductory course or consent of instructor. (3) (Bauder)

125 — RURAL MOVEMENTS AND SOCIAL POLICY. Social factors in selected rural movements, their organization and development, influence upon governmental policy, and the social needs met.

Prerequisite: an introductory course or consent of instructor. (3) I (Brown)

160 — RURAL COMMUNITY ANALYSIS. The nature of the town-country community, with special emphasis on the function of institutional and agency programs and their leaders in relation to the community. Same course as H. E. 175.

(3) I, II (Bauder)

180 — ADVANCED RURAL SOCIOLOGY. Systematic study of the structure and function of family, informal and locality groups, social strata, religious, educational, political and occupational groups in rural society.

(3) II (Brown)

190a-c — SPECIAL PROBLEMS IN RURAL LIFE. Supervised individual study in selected sub-fields of rural sociology. Population, standards of living, neighborhood and community change, and rural institutions are among the available fields for investigation.

(2) I, II (Staff)

200a-c — RESEARCH IN RURAL SOCIOLOGY. Individual graduate research with correlated study of rural social research types and methods.

(2) I, II, S (Staff)

210 — SEMINAR IN RURAL ORGANIZATION. Basic theories of social organization, comparative study of selected systems of rural social organization: examples of purposeful organization.

(3) I (Beers)

220 — SEMINAR IN RURAL ATTITUDES. The nature and genesis of rural attitudes and their relation to rural social control; analysis of contemporary rural attitudes and opinion.

(3) II (Bauder)

230 — RURAL URBAN RELATIONS. Interdependence of city and country; solidary and antagonistic relationships of city and country; the process of urbanization, and problems of rural adjustment to urban influences.

(3) II

250a, b — TOPICAL SEMINAR. Analysis of topics of scientific interest in rural sociology, selected from such fields as the following: criticism of research; sociological factors in land use; migration; rural social ecology of the South; highland societies.

(3) I, II (Staff)

SOCIOLOGY (See Social Sciences)

VI. EDUCATION

GENERAL STATEMENT OF REGULATIONS GOVERNING GRADUATE WORK IN THE COLLEGE OF EDUCATION

Work leading to the doctoral degree with a major in education must conform to the same rules and regulations as prescribed in the general requirements, pages 13-16 of this Bulletin. In addition, two other requirements are prescribed by the College of Education for all doctoral candidates. First, students must be in full-time residence for at least one regular semester, and preferably one full year, during the course of their work at the University. Second, no person will be considered as a candidate for the doctoral degree with a major in education unless he has completed three years of successful teaching experience.

There are two plans of work leading toward the degree of Master of Arts in Education. Plan II, which follows, is permissible only with the approval of the Graduate School and the Dean of the College of Education.

Plan I

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 200 or higher.
4. At least 36 weeks must be spent in residence at the University of Kentucky as a graduate student.
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.
7. A standing of 2.0 (an average of B) or better must be made on all graduate work.
8. Eight semester hours and twelve weeks of residence may be done with the permission of the student's adviser and the dean of the Graduate School in extension classes, off-campus study, or independent work courses.
9. Oral and written final examinations will be required of all candidates for the degree of Master of Arts in Education. These examinations are to be taken just prior to or during the session in which the degree is to be conferred.
10. All graduate students must meet the requirements for a teaching certificate in Kentucky as established by the State Department of Education of Kentucky. These requirements are outlined in the General Catalog of the University. If deficiencies are found, they should be overcome before proceeding with graduate work.

Plan II

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 12 semester hours must be in courses numbered 200 or higher.

4. At least 36 weeks must be spent in residence at the University of Kentucky as a graduate student.
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.
7. A standing of 2.0 (an average of B) or better must be made on all graduate work.
8. Ten semester hours and twelve weeks of residence may be done with the permission of the student's adviser and the dean of the Graduate School in extension classes, off-campus study, or independent work courses.
9. Oral and written final examinations will be required of all candidates for the degree of Master of Arts in Education. These examinations are to be taken just prior to or during the session in which the degree is to be conferred.
10. All graduate students must meet the requirements for a teaching certificate in Kentucky as established by the State Department of Education of Kentucky. These requirements are outlined in the General Catalog of the University. If deficiencies are found, they should be overcome before proceeding with graduate work.

Each student's graduate curriculum must be a well-rounded program of courses related to the student's major interest and approved by his committee. In cases of deficient preparation the committee, with the approval of the Dean, determines prerequisite undergraduate courses to be taken. The following committees have been designated to guide graduate students in their work toward the master's degree in education:

Area

Elementary Teachers	Duncan, Ginger, Harris
Secondary Teachers	
General	Hartford, Sorenson, Adams, Ginger
Agriculture	Hammonds, Tabb, Wall
Art	Ginger, Haines, Rannels
Business Education	Musselman, Thomas, Humphreys
Home Economics	Parker, Sneed
Industrial Education	Baker, Crumpton, Youmans
Music	Hornowski, Lewis, Ginger
Physical Education	Ginger, Seaton, Clay, Carr
Elementary Principal	Duncan, Harris, Ginger
Secondary Principal	Hartford, Meece, Hopper
Supervisor	Adams, Hopper, Harris
Attendance Officer	Meece, Sorenson, Hopper
Superintendent	Meece, Sorenson, Hopper

SUGGESTED GRADUATE CURRICULA

	<i>Semester Hours</i>
<i>For Superintendents</i>	
*Ed 201 Foundations in Education	5
*Ed 202 Local School Administration	3

*Ed 207	School Buildings and Equipment	3
Ed 221a, b	Seminar in Administration	(each) 3
*Ed 225	Supervision of Instruction	3
*Ed 227	Principles of Curriculum Construction	3
Ed 229	The Elementary Principal	3
*Ed 231	Business Administration and Finance of Public Education	3
Ed 233	The Administration of the Teaching Personnel	3
Ed 232	High School Administration	3

For Principals

Ed 201	Foundations in Education	5
*Ed 212	The Elementary School	3
*Ed 214	The Secondary School	3
*Ed 225	Supervision of Instruction	3
*Ed 227	Principles of Curriculum Construction	3
*Ed 229	The Elementary Principal	3
*Ed 232	High School Administration	3
*Ed 255a	Guidance and Counseling in Today's Schools	3

For Supervisors and Helping Teachers

Ed 201	Foundations in Education	5
*Ed 202	Local School Administration	3
Ed 212	The Elementary School	3
Ed 214	The Secondary School	3
*Ed 225	Supervision of Instruction	3
*Ed 227	Principles of Curriculum Construction	3
Ed 229	The Elementary Principal	3
Ed 292a, b	Field Problems in Curriculum and Supervision	(each) 3

For Critic Teachers on the Elementary Level

Ed 201	Foundations in Education	5
Ed 212	The Elementary School	3
*Ed 224	Organization and Supervision of Student Teaching	3
*Ed 225	Supervision of Instruction	3
*Ed 227	Principles of Curriculum Construction	3
Ed 229	The Elementary Principal	3

For Critic Teachers on the Secondary Level

Ed 201	Foundations in Education	5
Ed 214	The Secondary School	3
*Ed 224	Organization and Supervision of Student Teaching	3
*Ed 225	Supervision of Instruction	3
*Ed 227	Principles of Curriculum Construction	3
Ed 232	High School Administration	3

* Required courses for Kentucky certification (effective September 1, 1952)

For High School Teachers Majoring in Education

Ed 201	Foundations in Education	5
Ed 214	The Secondary School	3
Ed 227	Principles of Curriculum Construction	3
Ed 254	Problems in Educational Psychology	3
Ed 255a	Guidance and Counseling in Today's Schools	3

For Elementary Teachers Majoring in Education

Ed 201	Foundations in Education	5
Ed 212	The Elementary School	3
Ed 227	Principles of Curriculum Construction	3
Ed 229	The Elementary Principal	3
Ed 254	Problems in Educational Psychology	3

For Music Majors

Ed 201	Foundations in Education	5
Ed 251	Problems in Public School and Community Music	2
Ed 252	Field Problems in Music	2
Ed 253	Independent Work in Music Education	3
Ed 254	Problems in Educational Psychology	3

For Business Education Majors

Ed 201	Foundations in Education	5
Ed 208a	Problems in Business Education	3
Ed 255a	Guidance and Counseling in Today's Schools	3
Ed 256	The Social Business Subjects in High School	3
Ed 257a	Seminar in Business Education	3
Ed 259	The Commerce Curriculum	3
Ed 271	Administration and Supervision of Business Education	3

For Agricultural Education Majors

Ed 201	Foundations in Education	5
Ed 214	The Secondary School	3
Ed 227	Principles of Curriculum Construction	3
Ed 280	Method in Teaching Vocational Agriculture	3
Ed 287b	Selecting Teaching Materials	3
Ed 287c	Adult-Farmer Schools	3
Ed 287d	Directing Farm Practice	3
Ed 287f	Young-Farmer Schools	3

For Home Economics Education Majors

Ed 261	Supervision in Home Economics Education	3
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(For Supervision of Student Teachers)

Ed 263	Current Problems in Home Economics Education	3
Ed 264	Modern Trends in Home Economics Education	3

Ed 268	Home Economics Curriculum Construction	3
Ed 269	Evaluation in Home Economics Education	3
Ed 265		
or 222	Research in Home Economics Education	3

For Industrial Education Majors

Ed 171a, b	Principles and Philosophy of Industrial Education	(each) 3
Ed 123	Vocational Guidance	3
Ed 183a, b	Methods in Industrial Education	(each) 3
Ed 134	Organization and Operation of Part-Time and Evening Classes	3
Ed 214	The Secondary School	3
Ed 201	Foundations in Education	5
Ed 232	High School Administration	3
Ed 227	Principles of Curriculum Construction	3

GRADUATE COURSES IN EDUCATION

DIVISION OF ADMINISTRATION

101 — SCHOOL ORGANIZATION. Scope and general character of the American public school system and organizational and administrative problems as they relate to the work of the classroom teacher.

(3) I, II, S (Meece and Hopper)

198 — THE ADMINISTRATION OF PUPIL PERSONNEL. Administrative problems relating to child accounting, including school census, attendance records and reports, social and economic factors affecting school attendance, and duties and responsibilities of school and non-school personnel and agencies.

(3) S (Hopper)

202 — LOCAL SCHOOL ADMINISTRATION. The organization, management, and control of a local school system, including such problems as federal, state, and local relationships, board of education, pupil personnel, employed personnel, public relations, finance and business management, and school services.

(3) I, II, S (Meece)

203 — CONSTITUTIONAL AND LEGAL BASIS OF PUBLIC SCHOOL ADMINISTRATION. A study of court decisions to discover the legal principles involved in practical problems of school administration.

Prerequisites: Education 202, 213, or 232.

(3) II, S (Meece)

207 — SCHOOL BUILDINGS AND EQUIPMENT. Measurement and evaluation of existing school building facilities, planning new buildings, determining suitable equipment, and financing the building program.

Prerequisite: Education 202 or its equivalent.

(3) (Hopper)

210a, b — INDEPENDENT WORK IN SCHOOL ADMINISTRATION. Includes research on a practical problem in school administration. Open only to students with at least one semester of graduate work in education. Approval of instructor necessary before registration.

(3) I, II (Staff)

213 — STATE SCHOOL ADMINISTRATION. Organization, administration, and control of education at the state level, including state-federal and state-local school relationships, state support, control of the material environment, training and certification of teachers, teachers' contracts, tenure, retirement. (3) S (Meece)

221a, b — SEMINAR IN ADMINISTRATION. A critical study of selected problems in school administration. The course is designed primarily for students who have had some administrative experience.

Prerequisites: Education 202 and 225. (3) II, S (Meece and Hopper)

229 — THE ELEMENTARY PRINCIPAL. Problems involved in the organization and administration of a modern elementary school.

(3) I, S (Duncan and Harris)

231 — BUSINESS ADMINISTRATION AND FINANCE OF PUBLIC EDUCATION. A course for prospective superintendents. Emphasizes school support, including state, local, and federal revenues; budgetary policy; procedures for purchasing, accounting, and reporting costs; management of funds, property, equipment, and supplies; payroll procedures, records, and reports.

(3) II, S (Meece)

232 — HIGH SCHOOL ADMINISTRATION. This course deals with organization, administration, and problems of the modern secondary schools, including such specific problems as school staff, program of studies, records and reports, school-community relationships, school plant, finance, and scheduling.

(3) I, II, S (Hopper)

233 — THE ADMINISTRATION OF THE TEACHING PERSONNEL. The course emphasizes principles and practices in teacher preparation, selection, and placement. Includes a study of salaries, tenure, retirement, teaching loads, sick leave, personnel records, and teacher participation in school administration problems.

(3) (Hopper)

238 — TRENDS IN HIGHER EDUCATION. A survey of modern tendencies in higher education: scope and development, objectives, organization, administration, curricula, finance, faculty and student personnel. Designed primarily for prospective college administrators, teachers, and registrars.

(3) (Dickey and Chamberlain)

276 — ADMINISTRATIVE PROBLEMS IN TODAY'S EDUCATION. A study of present-day administrative problems. The course is designed to be of assistance particularly to superintendents.

(3) (Meece)

290a, b — TECHNIQUE AND PROFESSIONAL WORK OF THE REGISTRAR. A comprehensive study of the work of the registrar in institutions of higher education, including the history, literature, and present-day tendencies; rules of the University, recommendations of the American Association of College Registrars.

(3) I, II, S (Sprowles)

301a, b — RESEARCH PROBLEMS IN EDUCATIONAL ADMINISTRATION. An independent research course for the study of special problems in educational administration.

Prerequisites: one year of graduate work.

(3) I, II, S (Meece and Hopper)

321a, b — RESEARCH PROBLEMS IN HIGHER EDUCATION. An independent research course for the study of special problems in higher education.

Prerequisites: one year of graduate work. (3) I, II, S (Dickey, Chamberlain, Sprowles)

DIVISION OF FOUNDATIONS OF EDUCATION

119 — THE ELEMENTARY SCHOOL PUPIL. The psychology of the child in the primary and intermediate grades.

Prerequisite: one course in psychology. (2) I, S (Sorenson)

122 — EDUCATIONAL TESTS AND MEASUREMENTS. The problems of measurement in the school program, with special emphasis on standardized tests. The construction and use of new-type tests, use and limitations of traditional examinations, marking systems, etc., are also considered.

(3) I, S (Sorenson)

147 — THE SECONDARY SCHOOL PUPIL. The psychology of the pupil in junior and senior high school.

Prerequisite: one course in psychology. (2) II, S (Sorenson and Reed)

148 — EDUCATIONAL PSYCHOLOGY. Application of psychology to the problems of learning and teaching.

(3) I, II, S (Jensen)

151 — THE TEACHING OF HIGHER LEVEL STUDY SKILLS. A course designed to demonstrate the teaching of study skills (including remedial work) in secondary schools. One approach to teaching these skills will include the study problems of college students.

(3) I, S (Jensen)

200a, b — PHILOSOPHY OF EDUCATION. An advanced course dealing with the philosophy of democratic education and applications to some of the larger educational problems of today.

Prerequisite: 12 semester hours in education. (3) I, II (Hartford)

201 — FOUNDATIONS IN EDUCATION. An intensive study in various fields which contribute to the development of educational theory and practice.

(5) I, S (Hartford and Jensen)

205 — REVIEW OF CURRENT EDUCATIONAL LITERATURE. An extensive study of current educational literature as found in educational periodicals.

Prerequisite: 12 semester hours in education. (3) II, S (Hartford)

217 — GENERAL HISTORY OF EDUCATION. A survey of the history of education from the Greek period to the present.

(3) (Hartford)

218 — HISTORY OF EDUCATION IN THE UNITED STATES. A history of the growth and development of education in the United States from earliest Colonial times to the present, including recent movements and trends.

(3) (Hartford)

219 — HISTORY OF EDUCATIONAL THOUGHT. A study of the lives and writings of the world's educators to acquaint the student with the ideals and contributions to society of great educators.

(3) I, S (Hartford)

220 — COMPARATIVE EDUCATION. Comparisons of modern national systems of education. (3) II, S (Hartford)

222 — METHODOLOGY OF EDUCATION RESEARCH. A course intended to acquaint the student with the various techniques of research and to aid him in methods of attack on his own particular research problems.
Prerequisite: 12 semester hours in education. (3) II (Sorenson)

223 — EDUCATIONAL STATISTICS. A non-mathematical study of the applications of statistical and graphical methods to educational data. (3) I (Sorenson)

228a, b — SEMINAR IN EDUCATION. A course planned for graduate students majoring in education, given under the direction of the faculty of the College of Education. (1) I, II (Hartford and Staff)

230 — EDUCATIONAL SOCIOLOGY. A course in sociological foundations of education. (3) II, S (Hartford)

237a, b — INDEPENDENT WORK IN HISTORY OF EDUCATION. Independent work problems and topics for advanced students in history of education. (3) I, II, S (Hartford)

241a, b — SEMINAR IN FOUNDATIONS OF EDUCATION. A critical study of selected problems in the foundations of education areas. (3) S (Hartford)

247a, b — INDEPENDENT WORK IN PHILOSOPHY OF EDUCATION. An independent work course for students who have done a minimum of 12 semester hours of graduate work, including Education 200a, b, 219, and 230. (3) I, II, S (Hartford)

254 — PROBLEMS IN EDUCATIONAL PSYCHOLOGY. A critical survey of the psychological theories and research applicable to educational practices.
Prerequisite: one year of psychology. (3) II, S (Jensen)

255a, b — GUIDANCE AND COUNSELING IN TODAY'S SCHOOLS. A course for those concerned with an effective program of guidance; deals with principles and techniques for the formulation and evaluation of a complete guidance program including inventories, counseling, placement, and follow-up. (3) S

258a, b — INDEPENDENT WORK IN EDUCATIONAL PSYCHOLOGY. An independent work course for students who have done a minimum of 12 semester hours of graduate work including Education 122, 147, or 254. (3) I, II, S

260 — PROBLEMS IN EDUCATIONAL SOCIOLOGY. An advanced course in the application of sociological findings to education including consideration of Southern regional problems and potentialities.
Prerequisites: 12 semester hours of graduate work including Education 230 or equivalent. (3) S (Hartford)

275 — ADVANCED PROBLEMS IN PHILOSOPHY OF EDUCATION. A critical study of philosophical problems which relate to present day education.
Prerequisites: teaching experience and 6 semester hours in philosophy of education. (3) (Hartford)

DIVISION OF INSTRUCTION AND PLACEMENT

BUSINESS EDUCATION

104 — FOUNDATIONS OF BUSINESS EDUCATION IN THE HIGH SCHOOL. The origin, status, and objectives of business education in the secondary school. Required of business education majors.

(3) I (Musselman)

158a — TEACHING SECRETARIAL SUBJECTS. Special techniques and devices for teaching shorthand, typewriting, and secretarial office practice. Required of business education majors.

(3) II, S (Musselman)

158b — TEACHING BOOKKEEPING AND ACCOUNTING. Methods, materials, and techniques used in the teaching of bookkeeping and accounting.

(3) I, S (Musselman)

184 — TEACHING OFFICE APPLIANCES. Methods and materials used in teaching the various office appliances. Dictating machines, mimeographs, mimeoscopes, addressing machines, filing devices, calculating machines, and other office appliances are used.

(2) II, S (Musselman)

192 — TEACHING GENERAL BUSINESS SUBJECTS IN THE SECONDARY SCHOOLS. The aims and purposes of the general business courses are studied. Analysis is made of the objectives of the general business subjects, and methods and materials used in teaching them are emphasized.

(2) II, S (Musselman)

194 — TEACHING CONSUMER COURSES IN THE HIGH SCHOOL. Methods, materials, and techniques of teaching high school pupils the various aspects of consumer education. Emphasis is placed on procedures and the student should have a background of training in economics before taking the course.

(3) I, S (Musselman)

208a-d — PROBLEMS IN BUSINESS EDUCATION. A study of advanced problems of interest to business teachers such as testing in business subjects, guidance, job studies, placement and follow-up, equipment, and supervision.

(3) I, II, S (Musselman)

256 — THE SOCIAL BUSINESS SUBJECTS IN HIGH SCHOOL. An examination of the various social business subjects to determine their contribution to the objectives of business education.

(3) I (Musselman)

257a, b — SEMINAR IN BUSINESS EDUCATION. A study of current literature in business education with special reference to trends in this field.

(1) I, II, S (Musselman)

259 — THE COMMERCE CURRICULUM. A study of business subjects offered in the high school to determine their content and the place each should occupy in high school curricula. A course of study is developed for each subject.

(3) II, S (Musselman)

270 — BUSINESS EDUCATION IN COLLEGES AND UNIVERSITIES. Consideration of the problems pertaining to the teaching of business subjects at the college level. Consideration is also given to the development of curricula to meet teacher certification requirements in various states.

(3) S (Musselman)

271 — ADMINISTRATION AND SUPERVISION OF BUSINESS EDUCATION. Duties and responsibilities of city and state supervisors, department heads, and others engaged in directing business education.

(3) II, S (Musselman)

272a, b — INDEPENDENT WORK IN BUSINESS EDUCATION. An independent work course for students who have done a minimum of 12 semester hours of graduate work, one-half of which must have been in business education.

(3) I, II, S (Musselman)

273 — CLASSIFICATION AND POSSIBLE USE OF COMMUNITY RESOURCES IN BUSINESS EDUCATION. Course provides for community analysis, and the development of possible ways and means to supplement the business education course in the secondary school with a study of vital community resources.

(3) I, S (Musselman)

CURRICULUM AND INSTRUCTION

107 — SAFETY EDUCATION. A course designed to aid in developing skills and techniques essential to improving automotive and pedestrian safety. Psycho-physical tests, classroom work, behind-the-wheel driving, and other basic safety education are presented.

(3) S (Ginger and Myers)

127 — THE ELEMENTARY CURRICULUM. The philosophy and techniques of curriculum construction and some practical work in construction.

(3)

175a-f — MODERN EDUCATIONAL PROBLEMS. A brief survey of some of the problems in modern education.

(3) (Staff)

175g — MODERN EDUCATIONAL PROBLEMS: EDUCATION OF HANDICAPPED CHILDREN. Procedures to be used in the education of children who are handicapped physically, mentally, or emotionally. Attention is given to work with individual children as well as with groups.

(3) (Staff)

175i — MODERN EDUCATIONAL PROBLEMS: COMMUNITY ORGANIZATION IN ADULT EDUCATION. Problems of community organizations as they affect the adult life of citizens of the community served.

(3) (Staff)

175j — MODERN EDUCATIONAL PROBLEMS. A brief survey of some of the problems in modern education.

(3) (Staff)

186 — VISUAL TEACHING. A course in methods and techniques of visual instruction. Emphasis is on the effective use of films, film strips, pictures, maps, graphs, slides, field trips, by means of lesson plans. Surveys are made of visual materials.

(3) I, II, S (Myers and Godbey)

206 — PROBLEMS OF COLLEGE TEACHING. Methods commonly used in college teaching, bases for measuring instruction, marking systems, qualifications for college teaching, and efforts being made to improve college instruction.

(3)

224 — ORGANIZATION AND SUPERVISION OF STUDENT TEACHING. A course designed for teachers preparing to become supervising teachers. The basic principles apply to both elementary and secondary education.

Includes a presentation of the experiences deemed important in developing students into effective teachers. (3) S (Ginger)

225 – SUPERVISION OF INSTRUCTION. Development, purposes, and organization of supervisory programs. Special emphasis on the nature of educational leadership. Consideration of various approaches to supervision with special attention to current in-service education programs.

(3) II, S (Williams and Adams)

226a-f – PROBLEMS OF THE SCHOOL CURRICULUM. Problems in the field of the school curriculum and in the preparation of instructional materials. Students enrolling in this course are required to leave on file with the College of Education a complete report of each problem studied.

(3) (Staff)

227 – PRINCIPLES OF CURRICULUM CONSTRUCTION. Study of basic principles of curriculum development. Relationship of social and psychological factors to curriculum change. Survey of current approaches to curriculum organization. Consideration of means of curriculum development in school systems.

(3) (Musselman and Adams)

234 – PROBLEMS OF CURRICULUM MAKING. The selection of materials in the elementary and secondary fields, types of units used in modern instruction, and the various educational agencies that may be used to make the school a real community center.

(3) I (Musselman)

245 – ORGANIZATION OF AUDIO-VISUAL AIDS. Operation of an audio-visual program considering budgeting, training of personnel, duties of staff, sources of materials, and use of equipment. Previews are made of many audio-visual materials.

(3) II (Myers)

246 – MOTION PICTURES IN EDUCATION. The history of the educational motion picture, technique in the use of films, educational scenario writing, grading and scoring films, and motion picture appreciation.

(3)

249 – EXTRACURRICULAR ACTIVITIES. The underlying principles and common practices of the co-curricular activities programs as developed in public schools. Home room activities, assembly programs, and clubs are the three major sections of the course; other activities included when necessary.

(3) S (Ginger)

292a, b – FIELD PROBLEMS IN CURRICULUM AND SUPERVISION. A course designed to provide direct experience in dealing with educational problems in field situations. Observations, readings, and research also required. Registration only with consent of instructor.

(3) I, II (Dickey)

305a, b – RESEARCH PROBLEMS IN CURRICULUM AND SUPERVISION. An independent research course. Students confer individually with the instructor.

Prerequisite: one year of graduate work.

(3) I, II (Dickey)

Elementary Education

110 – ADVANCED ARTS AND CRAFTS IN THE ELEMENTARY SCHOOL. Planned to give the elementary teacher an understanding of teaching methods involved in, and construction of, art activities which would enrich the classroom program.

(2) II (Haines)

133 – STUDENT TEACHING IN THE ELEMENTARY SCHOOL. A course designed to give the student experience with and practice in the program of an elementary school. Actual work with children in all learning situations is the basic part of the course.

(12) I, II, S (Ginger and Supervising Teachers)

141 – PROBLEMS IN DIAGNOSTIC AND REMEDIAL READING. Prevention, diagnosis and corrective measures for reading difficulties. Study of investigations and literature in this field.

(3) (Duncan)

172 – THE TEACHING OF READING. A study of major factors in learning to read. Objectives, readiness, abilities needed for silent and oral reading. Methods of word attack, diagnostic and corrective techniques. Testing and materials for each level.

(3) II (Duncan)

173 – CHILDREN'S LITERATURE. Planned to acquaint students with literature for children, kindergarten through grade 8. Review of interests at different ages. Discussion of types of literature – folklore, modern fairy tales, myths and legends, realistic stories, biography and poetry.

(3) II (Duncan)

174 – TEACHING IN THE KINDERGARTEN. The nature, development, and education of the child of kindergarten age. Organization, equipment, curriculum, and procedures used with children of this age. Regular periods are scheduled for observing and participating in the kindergarten.

(3) I (Burke)

196 – SCIENCE IN THE ELEMENTARY SCHOOL. A background of elementary science usable with children in the first six grades. Includes planning units of work, organizing and using materials and references, making bibliographies for teachers and children, use of illustrative materials, and excursions.

(3) I (Harris)

212 – THE ELEMENTARY SCHOOL. Recent research and modern trends in teaching the skills and content subjects in the elementary school. Planned for supervisors, superintendents, principals, and teachers for better understanding of a modern elementary school.

(3) II (Duncan and Harris)

215a, b – INDEPENDENT WORK IN ELEMENTARY EDUCATION. An independent work course for students who have done a minimum of 12 semester hours of graduate work including Education 212 or 229.

(2) I, II (Duncan and Harris)

308a, b – RESEARCH PROBLEMS IN ELEMENTARY EDUCATION. An independent research course. Students confer individually with the instructor.

Prerequisite: one year of graduate work. (3) I, II (Duncan and Harris)

Music Education

251 – PROBLEMS IN PUBLIC SCHOOL AND COMMUNITY MUSIC. Problems in teaching, supervising, organizing, and leading public school and community music activities. Students in service have an opportunity to bring problems from their schools or community situations and, when possible, the instructor visits them in the field.

(2) (Lewis)

252 — FIELD PROBLEMS IN MUSIC. A course designed to permit the teacher or leader in the field to work out his local problems as an independent graduate teaching project under the guidance of the music staff.

(2) (Lewis)

253 — INDEPENDENT WORK IN MUSIC EDUCATION. A course designed for graduate students who undertake research problems in music education, conducted in regular consultation with the instructor.

(2)

Secondary Education

105 — FUNDAMENTALS OF SECONDARY EDUCATION. A consideration of problems which develop in connection with student teaching at the secondary level. This course is to be taken during the same semester in which the student is engaged in student teaching. (3) I, II, S (Myers and Reed)

111 — REMEDIAL READING IN THE SECONDARY SCHOOL. Diagnosis and corrective measures for junior and senior high schools. Study of plans of organizing a corrective program and suitable materials.

(2) (Duncan)

142 — STUDENT TEACHING IN ART. Designed to give the student practical experience through observation, planning, teaching, and evaluating procedures. The student works with children on all grade levels under the guidance of the supervising teacher.

(8) I, II (Haines)

153 — STUDENT TEACHING IN ENGLISH. Observation and practice in teaching high school English. Included are objectives and content of English courses in high school, planning and methods of teaching, testing, textbook analysis, audio-visual material and equipment, and safety education.

(9) I, II, S (Anderson, Carl, and Shipman)

154 — STUDENT TEACHING IN LANGUAGES. Aims and objectives, courses of study, materials, methods, and testing in French, Spanish, and Latin. Includes observation and practice in the content field, safety education, audio-visual aids, and planning conferences with the supervising teacher.

(9) I, II, S (West)

155 — STUDENT TEACHING IN THE SCIENCES. Aims and objectives, courses of study, methods, tests, equipment, general science, biology, physics and chemistry. The course includes observation and practice, safety education, audio-visual aids, and planning conferences with the supervising teacher.

(9) I, II, S (Kemper)

156 — STUDENT TEACHING IN MATHEMATICS. Aims and objectives, courses of study, materials, methods, and testing in algebra, geometry, and trigonometry. Includes observation and practice in the content field, safety education, audio-visual aids, and planning conferences with the supervising teacher.

(9) I, II, S (Porter)

157 — STUDENT TEACHING IN THE SOCIAL STUDIES. Includes a study of the development and present status of social studies programs, classroom methods and activities, teaching materials, testing and evaluation, professional aids to teachers, safety education, and observation and participation in actual classroom experiences.

(9) I, II, S (Peck, Shipman, and Carl)

169a, b – STUDENT TEACHING IN PHYSICAL EDUCATION. For students who expect to teach and who meet the requirements for a major in physical education. Experience in working with children in physical education activities comprises basic part of course. Safety education also included.

(4) I, II (Richeson and Gilb)

177a, b – STUDENT TEACHING IN MUSIC. A course planned for teachers who expect to become either instructors or supervisors of music in the public schools. Observation, teaching, work on research problems, and conferences with the supervising teacher included.

(4) I, II (Stallings and Adams)

193 – STUDENT TEACHING IN BUSINESS EDUCATION. Student teaching in business subjects such as general business, shorthand, typewriting, and bookkeeping. Observation and practice in the content field. Safety education, audio-visual aids, and planning conferences with the supervising teacher.

(9) I, II, S (McMurtry)

214 – THE SECONDARY SCHOOL. A course designed to acquaint the secondary teacher and the administrator with the nature and function of the secondary school.

(3) I, II, S (Adams)

248a, b – INDEPENDENT WORK IN SECONDARY EDUCATION. An independent work course for students who have done a minimum of 12 semester hours of graduate work including Education 214 or 232.

(3) I, II, S (Dickey, Ginger, and Adams)

307a, b – RESEARCH PROBLEMS IN SECONDARY EDUCATION. An independent research course. Students confer individually with the instructor. *Prerequisite: one year of graduate work.* (3) I, II, S (Ginger and Dickey)

DIVISION OF VOCATIONAL EDUCATION

AGRICULTURAL EDUCATION

179 – DETERMINING CONTENT IN VOCATIONAL AGRICULTURE. Interpretation of local data as a basis for course building. Each student works out the content of a four-year course in vocational agriculture.

(3) S (Hammonds, Wall)

181 – TEACHING VOCATIONAL AGRICULTURE. Preparation for teaching of agriculture. About one-half of the course is practice.

(15) I, II (Hammonds, Binkley, Neel, Tabb, Truitt, Veal)

182 – ADULT-FARMER SCHOOLS AND YOUNG-FARMER COURSES IN AGRICULTURE. A general introduction to adult-farmer schools and young-farmer courses with some observation of work in both of these fields.

(3) I, II (Hammonds)

185a-d – PROBLEMS IN AGRICULTURAL EDUCATION. Class work on current problems in agricultural education common to special groups of students (not individual-problem work).

(3) I, II, S (Hammonds, Tabb, Wall)

188 – FARM PRACTICE SUPERVISION. Practice and directed study in supervising farming programs in vocational agriculture.

(1) I, II, S (Hammonds, Tabb)

280 — METHOD IN TEACHING VOCATIONAL AGRICULTURE. The principles of method applied to the teaching of agriculture.

Prerequisite: experience in teaching vocational agriculture.

(3) S (Hammonds)

281 — TEACHING PREVOCATIONAL AGRICULTURE. Aims, purposes, and methods of teaching prevocational agriculture. Each student works out the content of a course, including selecting the teaching materials.

(3) (Hammonds)

285a-d — MODERN PROBLEMS IN AGRICULTURAL EDUCATION. Class work (not individual-problem work) on modern problems in agricultural education.

(3) I, II, S (Hammonds, Tabb)

287a — ADVANCED PROBLEMS IN AGRICULTURAL EDUCATION. Specific problems selected according to the needs of the individuals.

(3) I, II, S (Hammonds, Armstrong, Tabb)

287b — SELECTING TEACHING MATERIALS. Selection of specific references and other teaching materials to be used in the teaching of vocational agriculture.

(3) S (Wall)

287c — ADULT-FARMER SCHOOLS. Preparation for teaching adult farmers; organization of adult-farmer schools, curriculum content, method of teaching, and follow-up work.

(3) S (Tabb)

287d — DIRECTING FARM PRACTICE. Supervised farming as a method of teaching; standards, planning, supervision, and records.

(3) S (Hammonds)

287e — TEACHING FARM SHOP. A study of necessary content for shop, plans for securing and equipping the shop, and methods of teaching farm shop.

(3) S (Tabb)

287f — YOUNG-FARMER SCHOOLS. Content and method of teaching young-farmer courses in vocational agriculture.

(3) S (Hammonds, Armstrong)

289a, b — RESEARCH IN AGRICULTURAL EDUCATION. Individual problems of importance to agricultural education.

(3) I, II, S (Hammonds, Armstrong, Tabb)

DISTRIBUTIVE EDUCATION

112 — DETERMINING TEACHING CONTENT IN DISTRIBUTIVE EDUCATION. Course construction in the field of distributive education. This course is planned to meet the needs of persons engaged as instructors in the field of distributive education.

(3) I, II, S (Baker)

115a, b — PROBLEMS IN DISTRIBUTIVE EDUCATION. Problems in teaching vocational distributive education in day, part-time, and evening schools. The problems are selected in accordance with the needs and desires of the students.

Prerequisites: Education 112 and 128.

(3) I, II, S (Baker)

116 — PROBLEMS OF THE COORDINATOR IN DISTRIBUTIVE EDUCATION. Class work on problems of the coordinator of a high-school pro-

gram in distributive education, including selecting students for the program, placing students in stores, rating students, use of advisory committee, and overall planning. (3) I, II, S (Baker)

128 — TECHNIQUE OF TEACHING DISTRIBUTIVE EDUCATION. A study of the methods of teaching as applied to distributive education. The purpose of the course is to train prospective teachers to teach in the field of distributive education. (3) I, II, S (Baker)

HOME ECONOMICS EDUCATION

160 — TECHNIQUE OF TEACHING HOME ECONOMICS. A study of methods of teaching as applied to home economics.

Prerequisites: Home Economics (3) I, II (Parker)
26, 27, and 61; and *Education* 147.

162 — STUDENT TEACHING IN HOME ECONOMICS. Practical application of methods in teaching various phases of home economics.

Prerequisite: Education 160. (6) I, II (Parker, Averitt,
Monical, Smith, Sneed)

165 — ADULT EDUCATION IN HOME ECONOMICS. Problems in teaching vocational homemaking in day, part-time, and evening schools.

Prerequisite: Education 160. *Prerequisite (or to be taken concurrently): Education* 162. (3) I, II, S (Parker, Averitt,
Smith, Sneed)

166a-d — PROBLEMS IN HOME ECONOMICS EDUCATION. Problems in teaching home economics for high school students and adults. The course may include such subjects as teaching in, and supervision of, the school community cannery and the teaching of housing. (3) S (Parker, Sneed)

261 — HOME ECONOMICS SUPERVISION. A course planned primarily to help prepare teacher-trainers and supervisors of home economics education.

Prerequisites: Education 160 and 162; (3) I, S (Parker)
teaching experience; and permission of instructor.

263 — CURRENT PROBLEMS IN HOME ECONOMICS EDUCATION. Recent developments in home economics education.

Prerequisites: Education 160 and 162; (3) II, S (Parker, Sneed)
teaching experience.

264 — MODERN TRENDS IN HOME ECONOMICS EDUCATION. A basic course for students in home economics education. The course includes the development of home economics education and modern trends in curriculum, methods of teaching, and evaluation. (3) I, S (Parker)

265a, b — INDEPENDENT WORK IN HOME ECONOMICS EDUCATION. An independent work course for students who have done at least 12 semester hours of graduate work, one course of which must have been in home economics education. (3) I, II, S (Parker)

266a-c — SEMINAR IN HOME ECONOMICS EDUCATION. Individual investigations and reports on special problems in home economics education. (3) I, II, S (Parker)

267 — DIRECTED SUPERVISION IN HOME ECONOMICS EDUCATION. This course includes practice in teaching for observation by others, student teaching, and school visiting.

Prerequisites: two years of teaching experience and Education 261.

(3) I, II (Parker)

268 — HOME ECONOMICS CURRICULUM CONSTRUCTION. A study of the underlying principles of curriculum building for junior and senior high school and adult education in home economics.

Prerequisites: Education 160 and 162.

(3) S (Parker, Sneed)

269 — EVALUATION IN HOME ECONOMICS EDUCATION. A course to acquaint teachers of home economics with techniques used in measuring attainment in home economics in the junior and senior high school and college.

Prerequisite: teaching experience.

(3) I, S (Parker)

INDUSTRIAL EDUCATION

123 — VOCATIONAL GUIDANCE. Course content includes units on aims and purposes, individual inventory, and counseling techniques. Emphasis is placed on occupational information and guidance, placement, follow-up, and organization and administration of a guidance program.

(2) I, II, S (Crumpton and Youmans)

134 — ORGANIZATION AND OPERATION OF PART-TIME AND EVENING CLASSES. A course for administrators, coordinators, and teachers in part-time and evening industrial education. Covers the duties of a coordinator in cooperative training programs.

(2) I, II, S (Crumpton and Youmans)

136 — SURVEYS IN INDUSTRIAL EDUCATION. This course deals with the basic methods and techniques used in making a survey to determine the needs for trade and industrial education. How to gather, evaluate, and interpret the data are emphasized.

(2) I, II, S (Crumpton and Youmans)

137 — SPECIAL PROBLEMS IN INDUSTRIAL EDUCATION. The supervised study of approved problems in industrial education on a research basis.

(2) I, II, S (Crumpton, Youmans)

143 — MODERN INDUSTRIAL ANALYSIS. Modern industrial organizations; trends in industrial educational policies; the proper approach to and analysis of these problems as they affect the industrial vocational teacher.

(2) I, II, S (Crumpton, Youmans)

171a, b — PRINCIPLES AND PHILOSOPHY OF INDUSTRIAL EDUCATION. A course planned primarily for the advanced student in industrial education. It covers the general philosophy of vocational education as it relates to the problems and principles of industrial education.

(2) I, II, S (Crumpton, Youmans)

183a, b — METHODS IN INDUSTRIAL EDUCATION. The most approved methods in instructional management, including lesson planning, in the field of vocational industrial education.

(2) S (Crumpton, Youmans)

VOCATIONAL EDUCATION

211 — THE ADMINISTRATION OF VOCATIONAL EDUCATION. A course designed for superintendents, high-school principals, and other administrators. Its purpose is to train for administering and supervising vocational education in schools. (3) I, II (Hammonds)

282 — SPECIAL PROBLEMS IN VOCATIONAL EDUCATION. An independent work course for students interested in vocational education. Students make individual investigations and report on special problems. (3) I, II, S (Hammonds and Staff)

286a, b — SEMINAR IN VOCATIONAL EDUCATION. A critical study of selected problems in vocational education. The course is open only to students with experience in the field. (2) I, II, S (Hammonds, Parker, and Baker)

PHYSICAL EDUCATION

The Physical Education Department offers graduate work toward the degree of Master of Arts or the degree of Master of Science.

**COURSES FOR MEN AND WOMEN OPEN TO UPPER
DIVISION AND GRADUATE STUDENTS**

140 — ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION. Policies and procedures of administration on the secondary school and collegiate levels. Special emphasis on construction and care of facilities, equipment and supervision of personnel. Three hours per week. (3) I, S — odd years (Clay, Carr)

141 — COACHING ADVANCED BASKETBALL. Lecture and recitation on the theory and practice of team play in basketball. Special emphasis is placed upon systems of offense and defense as used by the leading coaches throughout the country. Two hours per week. *Prerequisite: Physical Education 41.* (2) I, S (Rupp, Clay)

142 — COACHING ADVANCED FOOTBALL. Lecture and recitation on the theory of football. Special emphasis is placed on generalship, signal systems, scouting and conditioning of players. Leading foot-ball systems are studied. Two hours per week. *Prerequisite: Physical Education 42 or permission of instructor.* (2) II, S (Bryant, McCubbin)

143 — HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION. Study of the historical development of physical education and an interpretation of the biological, psychological and sociological principles of physical education. Three hours per week. (3) II, S (Hackensmith, Carr)

144 — PHYSICAL EDUCATION IN THE SECONDARY SCHOOL. Required for teacher certification in physical education. Study of theory, practice, and methods of teaching physical education activities and supervising programs in the secondary school. Three hours per week of lecture, recitation, and visitation. (3) II, S (Carr, Clay)

145 – INTRODUCTION TO TESTS AND MEASUREMENTS. The construction and grading of essay and objective tests; construction and analysis of achievement tests; and testing and measuring in health and physical education. Two hours lecture and two hours laboratory per week.

(3) II (Hackensmith)

158a – SPORTS OFFICIATING FOR MEN. The theory and practice of officiating football, volleyball, basketball, swimming, and other sports. Officiating in college intramurals and high school athletics will be required. One hour lecture, two hours laboratory.

(1) I, S (Johnson)

158b – SPORTS OFFICIATING FOR MEN. The theory and practice of officiating basketball, track, baseball, tennis, and other sports. Officiating in college intramurals and high school athletics will be required. One hour lecture, two hours laboratory.

(1) II, S (Johnson)

159a – SPORTS OFFICIATING FOR WOMEN. Instruction, interpretation of rules, and practice in officiating field hockey, volleyball, basketball, and other sports. Preparation for Women's National Officials rating in athletics. One hour lecture, two hour laboratory.

(1) I, S (Carr)

159b – SPORTS OFFICIATING FOR WOMEN. Instruction, interpretation of rules and practice in officiating basketball, softball, tennis, and other sports. Preparation for Women's National Officials rating in athletics. One hour lecture, two hour laboratory.

(1) II, S (Carr)

165 – SAFETY IN PHYSICAL EDUCATION. Designed to prepare majors to teach safety education or to serve as a school safety coordinator. Provides a knowledge of all common areas of safety education but emphasizes safety in athletics, physical education and recreation. (2) I, S—even years (Seaton)

169a, b – STUDENT TEACHING IN PHYSICAL EDUCATION. See Secondary Education, College of Education.

(9) I, II (Gilb, Clay, Ginger, Seaton)

172 – KINESIOLOGY. Study of muscular and mechanical factors in bodily movements. Three hours lecture per week.

Prerequisites: Anatomy and Physiology 4 and 5.

(3) I, S – odd years (Mackey)

173 – REMEDIAL PHYSICAL EDUCATION. A study of the prevention and treatment of physical defects. Two hours lecture and two hours practice per week.

Prerequisite: Physical Education 172.

(3) II, S – even years (Mackey)

174 – TECHNIQUES OF REHABILITATION. A practical course in rehabilitation techniques employed in hospitals and rehabilitation centers. Four hours laboratory per week.

Prerequisite: Physical Education

(2) II (Mackey)

173 or permission of instructor.

180 – ADMINISTRATION AND ORGANIZATION OF RECREATION. This course is designed to equip students and community leaders with workable procedures for developing and operating recreation programs in communities of various sizes and with varying political and social structures.

(3) II, S (Kauffman)

181 – CAMPING IN EDUCATION. Purpose, history, organization, and conduct of camps of various types by educational institutions as an instrument for attaining the objectives of education. (2) I, S (Kauffman)

182 – INTRAMURAL SPORTS. A study of the history and development of intramural sports. Lecture, recitation, and practice in accepted methods of organizing and administering intramural sports. One hour lecture and two hours laboratory. (1) II, S – even years (McCubbin, Poe)

183 – INTERPRETATIONS OF LEISURE AND RECREATION. Designed to provide students interested in recreation as a profession, as an adjunct to other work, or as informed citizens with a basic understanding of the significance of leisure and the objectives of recreation. (3) I, S (Kauffman)

185 – COMMERCIAL RECREATION. Consideration of socio-economic aspects of commercial recreation and of the development of operational techniques. Designed for students and operators of commercial recreation facilities.

Prerequisite: Sociology 40 or permission of instructor.

(3) II, S (Kauffman)

190 – HISTORY AND SURVEY OF DANCE. The study of the evolution of dance through the cultural periods of history and the correlation of social structure and dance forms. Open also to male students. Three hours per week. (3) II, S – odd years (Staff)

191 – RHYTHMICAL FORM AND ANALYSIS. A functional study of rhythm presented in relation to movement. Open also to male students. One hour lecture and recitation, and two hours laboratory. (2) II (Staff)

192 – DANCE COMPOSITION. Creative composing in dance choreography and program planning. Open to male students. Two hours lecture and recitation and four hours laboratory per week.

Prerequisite: Physical Education 91.

(4) I (Staff)

COURSES OPEN TO GRADUATE STUDENTS ONLY

240 – GRADUATE SEMINAR IN PHYSICAL EDUCATION. Required of all graduate students upon entrance. An orientation course required of graduate students with a major interest in physical education. Two hours lecture and recitation. (2) I, II, S (Carr, Hackensmith)

241 – CURRENT STUDIES AND TRENDS IN HEALTH AND PHYSICAL EDUCATION. A study of modern trends in health and physical education and standards of evaluation in relation to the history of the various systems including a review of the principles and objectives. (3) II, S – even years (Seaton)

242 – PROBLEMS COURSE IN PHYSICAL EDUCATION. Students work on individual problems applicable to their situation and interests, as well as upon general school problems. An attempt is made by the instructor to visit each student on the job and to provide guidance in his work. (3) I, S – odd years (Seaton)

243 — PROBLEMS IN THE ADMINISTRATION OF ATHLETICS. For athletic directors, supervisors, and athletic coaches. A study of representative athletic administration procedures for colleges, public school systems, and municipal athletic leagues. Two hours per week.

(2) II, S — even years (Clay, Shively)

244 — TESTS AND MEASUREMENT IN HEALTH AND PHYSICAL EDUCATION. The theory and practice of measurement of strength, size, maturity, power, motor educability, agility, and special abilities. Two hours lecture and two hours laboratory per week.

(3) I, S (Hackensmith)

280 — PROBLEMS IN RECREATION. Current problems in recreation are identified and analyzed by the application of appropriate research techniques. Designed for recreationists, school people, and community workers.

(2) I, S (Kauffman)

290 — DANCE AND EDUCATION. The function of dance in the educational curriculum on the elementary, secondary, and college levels including teacher training and administrative problems.

*Prerequisite: Physical Education 91
or equivalent.*

(3) S — even years (Staff)

VII. ENGINEERING

Prerequisites for graduate work; students desiring to take any of the following courses should have the prerequisites indicated in each case. Courses numbered 200 and above are offered to graduates and to such practicing engineers as may be qualified to pursue them. A thorough working knowledge of chemistry, physics and mathematics is necessary. For credit toward an advanced degree, a candidate must hold a baccalaureate degree in the division of engineering in which he is registered, or its equivalent.

ENGINEERING GENERAL

Engineering Administration

102 – ENGINEERING ADMINISTRATION. A study of the methods, procedures, and principles involved in engineering analyses, contracts, specifications, estimates and valuations, and administration of engineering projects. Lecture and recitation, three hours.

Prerequisite: senior classification.

(3) I, II (Tenney, Elsey)

Applied Mechanics

100 – STRENGTH OF MATERIALS. A study of stress and strain due to direct forces, shear, bending, torsion, eccentric loads and combined stresses. Lecture and recitation, four hours.

*Prerequisites: Appl. Mech. 3
and Math. 20b.*

(4) I, II, S

(Hawkins, Barber, and Adams)

106 – ADVANCED STRENGTH OF MATERIALS. Unsymmetrical bending of beams, thin plates, stress analysis of thick walled cylinders, and rotating discs. Theory of elastic energy, curved beams, stress concentration, and fatigue. Lecture and recitation, three hours.

Prerequisite: Appl. Mech. 100.

(3) I, II, S (Hawkins and Adams)

107 – MECHANICAL VIBRATIONS. Vibrations of systems of one and several degrees of freedom, critical speeds, and torsional and lateral vibrations of shafts. Lecture and recitation, four hours.

Prerequisites: Appl. Mech. 4 or 7, and 100.

Prerequisite (or to be taken concurrently):

Math. 105a.

(4) I, II (Hawkins and Barber)

Engineering Drawing

115 – PHOTOGRAPHY. (For Engineers.) Lectures on the optics and chemistry of photography together with practical demonstrations. Lecture, one hour; laboratory, four hours a week.

Prerequisites: Chem. 1a and Phys. 3a, junior standing.

(3) I (Nollau)

Fire Protection and Safety Engineering

101a — FIRE PROTECTION ENGINEERING. A study of building materials and construction relative to fire prevention and the analysis of common fire hazards. Lecture and recitation, two hours a week.

Prerequisite: junior classification.

(2) I (Gard)

101b — FIRE PROTECTION ENGINEERING. A study of special fire hazards, principles of fire insurance ratings, and laws and ordinances governing fire prevention and protection. Lecture and recitation, two hours a week.

Prerequisite: junior classification.

(2) II (Gard)

101c — FIRE PROTECTION ENGINEERING. A study of fire protection methods including water supply, fire fighting equipment, town grading, alarm systems and special extinguishing devices. Lecture and recitation, two hours a week.

Prerequisite: junior classification.

(2) I (Gard)

102 — SAFETY ENGINEERING. A study of safety methods including industrial accident prevention, accident statistics and analysis, industrial safety hazards, protective equipment, transportation and general safety. Lecture and recitation, two hours a week.

Prerequisite: junior classification.

(2) II (Gard)

CIVIL ENGINEERING

107 — SOIL MECHANICS. A study of soil and its utilization in foundations for structures and subgrade for highways. Stabilization and improvement of bearing values. Lectures and recitations, two hours a week; laboratory, three hours.

Prerequisite: senior classification.

(3) I, II (Gregg)

110a — REINFORCED CONCRETE. Theory and design of beams, slabs, girders and columns as related to building frames, retaining walls and bridges. Lecture and recitation, three hours; drawing room, three hours.

Prerequisite: Civ. Eng. 171a.

(4) I, II (Moldovan, Mory)

110b — REINFORCED CONCRETE. Continuation of Civ. Eng. 110a, with special emphasis on complete structures. Lecture and recitation, two hours; drawing room, three hours.

Prerequisite: Civ. Eng. 110a.

(3) I, II (Mory)

114 — ADVANCED SURVEYING. Methods of geodetic surveying and adjustment of observations, map projections. Plane table surveys. Introduction to aerial photography. Class work, two hours; field work, three hours.

Prerequisite: summer camp.

(3) I, II (Blythe)

120 — HYDRAULICS. Mechanics of fluids under static and dynamic conditions. Fundamentals as found in any standard elementary textbook. Lecture and recitation, two hours.

Prerequisites: Appl. Mech. 4 and 100.

(2) I, II, S (Cheek)

123 — HYDRAULICS LABORATORY. Experimental investigation and application of some of the more important principles covered in Civ. Eng. 120. Laboratory, three hours.

Prerequisite (or to be taken concurrently):

(1) I, II, S (Cheek)

Civ. Eng. 120.

151 — WATER SUPPLY AND WATERWORKS. Rainfall and run-off, surface and underground sources of supply. The purification plant and its operation. Distribution and pressure problems. Pipe networks. Lecture and recitation, two hours.

Prerequisite: Civ. Eng. 120.

(2) I, II (Cheek)

Concurrent with Civ. Eng. 152.

152 — SEWERS AND SEWAGE DISPOSAL. Sanitary and storm sewers, flow problems. Disposal plants and their operation. Lecture and recitation, two hours.

Prerequisite: Civ. Eng. 120.

(2) I, II (Cheek)

Concurrent with Civ. Eng. 151.

157 — SANITARY ENGINEERING FOR HEALTH OFFICERS. For County Health Officers only. Stress is laid upon preventative rather than curative measures. The theory portion of Civ. Eng. 24 is included so the doctor will better understand the problems of the sanitarian.

(2) S (Cheek)

158 — SANITARY ENGINEERING DESIGN. For students now majoring in Sanitary Engineering. Complete design and layout of a water plant, distribution system, storm and sanitary sewer, and sewage disposal plant. Drawing room, nine hours.

Prerequisites: Civ. Eng. 151 and 152.

(3) I, II (Cheek)

159 — DESIGN AND OPERATION OF WATERWORKS AND SEWERS. General designs of water treatment and sewage disposal plants; distribution and collection systems; practice in the more common laboratory tests used in the plants. Lab. and drawing room, six hours.

Prerequisites: Civ. Eng. 151 and 152.

(2) I, II (Cheek)

171a — THEORY OF STRUCTURES. Analysis of stresses in simple and indeterminate structure, including beams, girders, trusses, towers, and building frames. Lecture and recitation, three hours.

Prerequisite (or to be taken concurrently):

Appl. Mech. 100.

(3) I, II (Moldovan, Mory)

171b — THEORY OF STRUCTURES. Continuation of Civ. Eng. 171a with emphasis on indeterminate structures. Lecture and recitation, three hours.

Prerequisite: Civ. Eng. 171a.

(3) I, II (Mory)

173a — STEEL STRUCTURES. Design and details for various types of riveted and welded connections, riveted and welded building frames, plate girders and trusses. Lecture, one hour; drawing room, six hours.

Prerequisite: Civ. Eng. 171a.

(3) I, II (Mory)

173b — STEEL STRUCTURES. Continuation of Civ. Eng. 173a with emphasis on floor systems, trusses, and plate girders for bridges. Drawing room, six hours.

Prerequisite: Civ. Eng. 173a.

(2) I, II (Moldovan, Mory)

174 — GRAPHIC SOLUTION. Analysis of stresses by graphical methods, in simple structures including beams, girders, and trusses. Design and details of timber structure. Drawing room, six hours.

Prerequisite (or to be taken concurrently):

Civ. Eng. 171a.

(2) I, II (Moldovan, Mory)

182 — SANITATION. Municipal and rural sanitation presented from an engineering viewpoint. Also includes problems in heating, lighting, plumbing and ventilation.

Prerequisite: Bact. 57.

(2) I, II (Cheek)

202a-d — CONSTRUCTION. Advanced work in plain and reinforced concrete. Theory, design, and details for rigid buildings, bridge frames and arches. Calculation of stresses by the method of column analogy. Class work, one hour; laboratory, four hours.

(3 ea.) I, II (Mory)

221a, b — ADVANCED SOIL MECHANICS. Advanced study of the engineering properties of soils and the application of these theories to the design of engineering structures. Lecture, one hour; laboratory, four hours.

Prerequisite: Civ. Eng. 107.

(3 ea.) I, II (Gregg)

232a-d — HIGHWAY ENGINEERING. Advanced study of the principals of design, construction maintenance and laboratory investigations on highway materials. Lecture, one hour; laboratory, four hours.

(3 ea.) I, II (Chambers, Gregg)

242a-d — RAILROAD ENGINEERING. Advanced course in location, construction, maintenance, economical selection of lines, grade reduction, cost of operation, valuation, and structures and their maintenance. Class work, one hour; laboratory, four hours.

(3 ea.) I, II (Shaver)

252a-d — SANITARY ENGINEERING. Continuation of Civ. Eng. 159 covering more detailed design of various sanitary constructions. (Additional courses in chemistry, bacteriology, and zoology should be taken in connection with this course.) Class work, one hour; laboratory, four hours.

(3 ea.) I, II (Cheek)

262a-d — GEODETIC SURVEYING. Advanced course in geodetic calculations, development, and use of formulas used by the United States Coast and Geodetic Survey. Modern methods of field practice. Class work, one hour; laboratory, four hours.

(3 ea.) I, II (Shaver)

272a-d — STRUCTURAL ENGINEERING. Advanced work in structural steel. Theory, design, and details of arches, continuous highway and railroad plate girders, trussed bridges and building frames. Class work, one hour; laboratory, four hours.

(3 ea.) I, II (Mory)

282a-f — SPECIAL PROBLEMS IN CIVIL ENGINEERING. Individual work on some selected problem in one of the various fields of Civil Engineering. Laboratory, six hours.

Prerequisite: approval of Head of Department.

(3 ea.) (Staff)

283a-d — SEMINAR. Review of current literature in the field of Civil Engineering, general discussion and presentation of papers on departmental research. Required of all graduate students. Two hours. (1 ea.) (Staff)

500-1, 2, 3 — THESIS.

(0) I, II, S (Staff)

ELECTRICAL ENGINEERING

101 — FUNDAMENTALS OF ELECTRICAL MACHINERY. (For Civil, Metallurgical and Mining Engineers.) A study of the more common types of

D. C. and A. C. electrical equipment and machinery. Two class hours; two hours laboratory.

Prerequisite: Phys. 3b.

(3) I (Staff)

102 — ELECTRICAL MACHINERY. (For Metallurgical and Mining Engineers.) A study of electric power and its control as applied to mining machinery and metallurgical processes. Two class hours.

Prerequisite: Elec. Eng. 101.

(2) II (Bureau)

103 — ELECTRICAL LABORATORY FOR MINING ENGINEERS. A laboratory study of circuits and equipment used in the servicing and operation of industrial equipment. With special emphasis on mining applications. Three hours laboratory. Concurrent with Elec. Eng. 102.

(1) II (Staff)

105a — ELECTRICAL ENGINEERING CIRCUITS AND MACHINERY. (For Mechanical Engineers.) Study of electrical circuits and machinery and their control as found in modernly equipped installations. Three class hours; three hours laboratory.

Prerequisites: Phys. 3b and Math. 20b.

(4) I (Staff)

105b — ELECTRICAL ENGINEERING CIRCUITS AND MACHINERY. (For Mechanical Engineers.) Continuation of Elec. Eng. 105a. Three class hours; three hours laboratory.

(4) II (Staff)

107 — ELECTRICAL CONTROLS. Control of electric equipment. Types of contractors, relays, etc. Typical circuits with which they are tied together into units for automatic functioning. Two class hours; three hours laboratory.

Prerequisite: Elec. Eng. 116, 105b or 101.

(3) I (Noble, Maney)

108 — INDUSTRIAL ELECTRONICS. Electronic devices for industrial use, and their applications in the control of rectifiers, motors and welders. High frequency heating, timing circuits, and oscillators; phototubes, etc. Two class hours; three hours laboratory.

Prerequisites: Elec. Eng. 116, 161.

(3) II (Romanowitz, Smith)

110 — ELECTRICAL LABORATORY. An experimental study of electrical machinery. Lecture, one hour; laboratory, one three-hour period.

Prerequisite (or to be taken concurrently):

(2) I, II (Staff)

Elec. Eng. 116.

111 — ADVANCED ELECTRICAL LABORATORY. Continuation of Elec. Eng. 110. Laboratory, two hours.

(1) I (Staff)

114 — ALTERNATING CURRENT CIRCUITS. A mathematical study of single phase and polyphase circuits under the influence of steady state sinusoidal and non-sinusoidal voltages. Three class hours; three hours laboratory.

Prerequisites: Elec. Eng. 21 and Math. 20b.

(4) I, II (Staff)

115 — DIRECT CURRENT MACHINERY. A study of D. C. Machinery construction and design, and its operation and characteristics. Two class hours; three hours laboratory.

Prerequisites: Elec. Eng. 21 and Math. 20b.

(3) I (Staff)

116 — ALTERNATING CURRENT MACHINERY. A study of A. C. machinery construction and its operation and characteristics. Three class hours; three hours laboratory.

Prerequisites: Elec. Eng. 114, 115.

(4) II (Staff)

117 — ADVANCED ALTERNATING CURRENT MACHINERY. Advanced analytical study of A. C. machinery characteristics.
Prerequisite: Elec. Eng. 116. (3) II (Staff)

118 — ELECTRICAL POWER PLANT EQUIPMENT. A study of the electrical elements of a modern power plant and their operation and characteristics.
Prerequisite: Elec. Eng. 116. (3) (Staff)

120 — ELECTRICAL CIRCUIT ANALYSIS. Mathematical and physical principles of engineering analysis. Analogies, duals. Steady state and transient solutions. Fourier and Laplace analyses. Dimensional analysis. Bessel and Hyperbolic functions, etc. Two class hours; two hours laboratory.
Prerequisites: Elec. Eng. 114 and Math. C105a. (3) II (Allison, Nierenberg, Smith)

123 — ELECTRICAL EQUIPMENT PROBLEMS. (For Electrical Engineers.) Individual problems related to engineering practice are assigned. The solutions involve economic as well as engineering considerations. Lecture, one hour; five hours laboratory.
Prerequisites: Elec. Eng. 116, 120. (2) I, II (Bureau, Nierenberg)

124 — ELECTRICAL DESIGN. Fundamental relations in the design of electrical machinery. Includes the calculations for the design of several pieces of electrical equipment. Lecture, one hour; five hours laboratory.
Prerequisites: Elec. Eng. 115, 116. (2) I, II (Barnett)

135 — ELECTRICAL NETWORKS. Fundamentals of network theory in communication and power circuits. Network theorems, transmission lines and wave filters. Three class hours; three hours laboratory.
Prerequisites: Elec. Eng. 114, 120. (4) I (Allison, Romanowitz)

136 — ILLUMINATION ENGINEERING. Spectral nature of light sources; entities in illumination systems; measurements and standards; design of interior and out-door lighting systems. Two class hours; three hours laboratory.
Prerequisite: Phys. 3b. (3) I (Noble, Maney)

137 — ELECTRIC POWER TRANSMISSION AND DISTRIBUTION. A study of the problems involved in the transmission of electric power with special emphasis on the elements of the transmission line.
Prerequisite: Phys. 3b. (3) I, II (Staff)

139 — TELEPHONY. The theory and practice of modern telephone operation.
Prerequisite: Elec. Eng. 135. (3) II (Staff)

151a, b — SEMINAR. Weekly meeting with staff for reports and discussion on research and modern trends and practices in Electrical Engineering. Two class hours.
Prerequisite: senior standing. (1 ea.) I, II (Staff)

152a-c — INDEPENDENT PROBLEMS. (For Electrical Engineers.) A problem, approved by the Head of the Department, forms the background for study and research. Only for students the character of whose previous work justifies it. (1 ea.) I, II (Staff)

152d-f — INDEPENDENT PROBLEMS. (For Electrical Engineers.) A problem, approved by the Head of the Department, forms the background for study and research. Only for students the character of whose previous work justifies it.
(2 ea.) I, II (Staff)

161 — ELECTRONICS. High vacuum and gas tube characteristics. Electronic circuits, rectifiers and smoothing filters. Audio amplifiers, oscillators. Electronic instruments. Three class hours; three hours laboratory.
Prerequisite: Elec. Eng. 114.
(4) I, II (Staff)

162 — RADIO ENGINEERING I. Resonance at radio frequencies; coupled circuits and impedance transformation; radio frequency amplifiers. AM and FM transmitters and receivers. Three class hours; three hours laboratory.
Prerequisite: Elec. Eng. 161.
(4) I (Staff)

164 — RADIO ENGINEERING II. High frequency phenomena: Coupled circuits, impedance transformation, lines, antenna feeding and matching, wide band amplifiers, pulse circuits. Three class hours; three hours laboratory.
Prerequisites: Elec. Eng. 162, 135.
(2) I, II (Farris, Romanowitz)

165 — RADIO ENGINEERING — FUNDAMENTALS OF ELECTRIC WAVES. Fundamental theory of current, potential, power, and electric and magnetic fields. Vector analysis, Maxwell's equations. Plane waves, power flow and the Poynting vector. Two class hours.
Prerequisite: Elec. Eng. 120.
(2) II (Romanowitz)

206 — ELECTRIC POWER TRANSMISSION. The theory underlying the calculation and operation of long distance transmission circuits. Special attention to relay control.
(3) (Bureau, Barnett)

210 — SYMMETRICAL COMPONENTS. A study of the symmetrical component method of analyzing unbalanced conditions on transmission lines and its use in solving relay applications.
(3) (Bureau)

211a — LINEAR CIRCUIT ANALYSIS I. Laplace and Fourier transform methods of analysis of linear lumped constant systems under transient and steady state conditions: Feedback amplifiers; Filter networks; Stability and physical realizability.
Prerequisites: Elec. Eng. 120, 135.
(3) (Smith)

211b — LINEAR CIRCUIT ANALYSIS II. Continuation of Elec. Eng. 211a with an introduction to non-linear systems.
(3) (Smith)

212 — SERVOMECHANISMS. Synthesis of closed loop systems. Transient and steady state analysis of system transfer functions. Laplace transform and loci plot methods.
Prerequisites: Elec. Eng. 107, 108, 211a.
(3) (Smith)

221 — ELECTRON BEHAVIOR IN HIGH VACUUM AND GAS TUBES. Potential distribution, thermionic emission and electron flow; Energy of electrons in Metals; Maxwellian Distribution equations and curves; Random motions of electrons and ions.
Prerequisites: Elec. Eng. 108, 120.
(3) (Romanowitz)

222 — GASEOUS CONDUCTING ELECTRONIC DEVICES. Atomic energy level diagrams; Photo-electric emission and devices; Electric arcs and

glow discharges, plasmas and boundaries, sheaths and probes; Industrial devices.
Prerequisite: Elec. Eng. 221. (3) (Romanowitz)

223 – COMMUNICATION ENGINEERING – ADVANCED TRANSMISSION LINE THEORY. Open wire and coaxial lines, reflections, standing waves; circle diagram; stub matching; impedance transformation; wave guides. Continuation of Elec. Eng. 135.

Prerequisites: Elec. Eng. 135 and Math. 120. (3) (Romanowitz, Farris)

226 – RADIO ENGINEERING – ULTRA HIGH FREQUENCY. Generation, detection, and measurement of microwave energy; vacuum tubes at ultra high frequencies, the klystron and the magnetron. Lecture, two hours; three hours laboratory.

Prerequisites: Elec. Eng. 164, 165. (3) (Allison, Romanowitz)

227 – ELECTROMAGNETIC FIELDS. Advanced studies in electric and magnetic fields, using vector methods and Maxwell's equations; wave equations, radiation and propagation of energy.

Prerequisite: Elec. Eng. 165. (3) (Allison, Romanowitz)

230a-f – SPECIAL PROBLEMS IN ELECTRICAL ENGINEERING. Open to graduate students who have the ability to carry on research. Individual work in one of the various fields of Electrical Engineering. Laboratory, six hours a week.

(3 ea.) (Staff)

231a-d – SEMINAR. Review of current literature in the field of Electrical Engineering, general discussion and presentation of papers on departmental research. Required of all graduate students. Two class hours.

(1 ea.) (Staff)

500-1, 2, 3 – THESIS.

(0) I, II, S (Staff)

MECHANICAL ENGINEERING

100a – MACHINE DESIGN. Design of machine and structural elements. Lecture and recitation, three hours.

Prerequisites: Eng. Draw. 18 and Mech. Eng. 15b.

Prerequisite (or to be taken concurrently):

Appl. Mech. 100.

(3) I, S (Carter, Gard, Cannizzo)

100b – MACHINE DESIGN. Continuation of Mech. Eng. 100a. Drawing room, nine hours.

Prerequisite: Mech. Eng. 100a.

(3) I, II, S (Carter, Gard, Cannizzo)

104a – ENGINEERING THERMODYNAMICS. Fundamental principles of thermodynamics. Lecture and recitation, three hours.

Prerequisites: Phys. 3b and Math. 20b.

(3) I, S (Penrod)

104b – ENGINEERING THERMODYNAMICS. Continuation of Mech. Eng. 104a. Lecture and recitation, three hours.

Prerequisite: Mech. Eng. 104a.

(3) II, S (Penrod)

105 – POWER PLANT ENGINEERING. Study of the characteristics of steam and internal combustion engineering generating power stations. Lecture and recitation, three hours.

Prerequisites: Mech. Eng. 104b, 112.

(3) II, S (Walton, Cannizzo)

107 — FLUID MECHANICS. Fundamental principles of fluid flow. Lecture and recitation, three hours.

Prerequisite: Mech. Eng. 104a.

(3) II (Penrod, Baker, Savage)

108 — INTERNAL COMBUSTION ENGINES. A study of internal combustion engine cycles and the characteristics and performance of actual engines, valve gears, and materials of construction. Lecture and recitation, four hours.

Prerequisite: Mech. Eng. 105b or 134.

(3) II (Meyer, Beavers)

109 — REFRIGERATION. A course which deals with compression and absorption refrigeration machines and installations. Lecture and recitation, three hours.

Prerequisite: Mech. Eng. 104b or 134.

(3) I, S (Penrod, Baker, Knight)

110 — HEATING AND VENTILATING DESIGN. Brief course for Architectural Engineers, covering the selection and layout of heating and ventilating equipment. Drawing room, three hours.

Prerequisite (or to taken concurrently):

(1) II (Baker, Knight, O'Byrne)

Mech. Eng. 116.

112 — MECHANICAL LABORATORY. Fundamentals of mechanical engineering laboratory practice. Lecture and recitation, one hour; laboratory, three hours.

Prerequisite: Mech. Eng. 104a.

(2) II, S (Staff)

113a — MECHANICAL LABORATORY. Performance tests on heating, ventilating, and power plant equipment. Lecture and recitation, one hour; laboratory, three hours.

Prerequisites: Mech. Eng. 104b, 107.

(2) I (Staff)

113b — MECHANICAL LABORATORY. Continuation of Mech. Eng. 113a. Lecture and recitation, one hour; laboratory, three hours.

Prerequisite: Mech. Eng. 113a.

(2) II (Staff)

114a — AIR CONDITIONING, HEATING, AND VENTILATING. Theory of air conditioning and the mechanical equipment of buildings. Lecture and recitation, three hours.

Prerequisite (or to be taken concurrently):

(3) I (Baker, Knight)

Mech. Eng. 109.

114b — AIR CONDITIONING, HEATING, AND VENTILATING DESIGN. Continuation of Mech. Eng. 114a and the complete design and layout of a year-round air conditioning system. Lecture, one hour; drawing room, six hours.

Prerequisite: Mech. Eng. 114a.

(3) II (Baker, Knight)

116 — ELEMENTARY HEATING, VENTILATING, AND AIR CONDITIONING. Fundamental Principles of air conditioning. Lecture and recitation, three hours.

Prerequisite: Phys. 1a or its equivalent.

(3) II (Baker, Knight, O'Byrne)

122a — SEMINAR. Studies of current engineering literature, preparation and presentation of bibliographies and reports through the use of the Engineering Index and Industrial Arts Index. Two hours a week.

Prerequisite: senior classification.

(1) I (Staff)

122b — SEMINAR. Continuation of Mech. Eng. 122a. Two hours a week.

Prerequisite: senior classification.

(1) II (Staff)

129 — ELEMENTS OF HEAT TRANSFER. Fundamental principles of heat transfer. Lecture and recitation, four hours.

Prerequisite: Mech. Eng. 104b. (4) I, S (Penrod, Baker, Walton)

130 — APPLIED AERODYNAMICS. Fundamental principles of fluid mechanics applied to aerodynamics. Lecture and recitation, three hour.

Prerequisites: Mech. Eng. 104b, 107. (3) I (Savage)

131a — AIRPLANE DESIGN. Covering fundamental principles of airplane design. Lecture and recitation, three hours.

Prerequisite (or to be taken concurrently): Mech. Eng. 130. (3) (Savage)

131b — AIRPLANE DESIGN. Continuation of Mech. Eng. 131a. Lecture and recitation, one hour; laboratory, two two-hour periods.

Prerequisite: Mech. Eng. 131a. (3) (Savage)

133 — TOOL DESIGN. An introduction to Tool Engineering which embodies the fundamental principles of designing jigs, fixtures, cams, gauges, punches, dies, and automatic machine tools. Lecture, one hour; drawing room, six hours.

Prerequisite: Mech. Eng. 100b. (3) I (Carter)

134 — ELEMENTS OF ENGINEERING THERMODYNAMICS. (For Civil, Electrical, and Mining Engineers.) General energy equations, mixtures of gases and vapors, flow of fluids, vapor power cycles, internal combustion cycles, and refrigeration cycles. Recitation, three hours.

Prerequisites: Phys. 3b and Math. 20b. (3) I (Staff)

135 — EXPERIMENTAL AERODYNAMICS. A complete wind tunnel analysis of a scale made to obtain lift, drag, pitching moment, and side force data. Lecture, one hour; laboratory, four hours.

Prerequisite: Mech. Eng. 130. (3) II (Savage)

136 — INTERNAL COMBUSTION ENGINE LABORATORY. A study of magnetos, distributors, fuel ignition, timing, carburetors, oil systems, and performance tests on engines. Aeronautical Laboratory, three hours.

Prerequisites (or to be taken concurrently): (1) I, II (Meyers, Beavers)
Mech. Eng. 108, 113a.

201a-d — AUTOMOTIVE ENGINEERING. An advanced course in the essentials of motor vehicle design, construction, and operation. Drafting room, laboratory and lectures by appointment.

(3 ea.) (Meyer)

202a-d — POWER PLANT ENGINEERING. Advanced work in the design, selection, layout, and operation of heat-power plant equipment.

(3 ea.) (Penrod, Walton)

203a — HEATING, VENTILATING, AND AIR CONDITIONING. Theoretical analysis of complex refrigeration cycles and treatment of advanced refrigeration topics; intermittent heating; advanced psychrometrics and air conditioning techniques.

(3) (Baker, Knight)

203b — HEATING, VENTILATING AND AIR CONDITIONING. Analysis of panel heating and cooling systems; theoretical development of exact radiation equations involving multiple reflections; configuration factor analysis; exact and simplified design techniques.

(3) (Baker, Knight)

203c, d — HEATING, VENTILATING AND AIR CONDITIONING. Advanced work in the design, selection, layout, and operation of heating, ventilating and air conditioning equipment with emphasis on industrial application and heat pump design. (3 ea.) (Baker, Knight)

204a-d — ADVANCED MACHINE DESIGN. The application of the principles of mechanics of materials, dynamics, and kinematics to the design of complete machines. This involves a knowledge of shop practice and methods of construction. (3 ea.) (Meyer, Carter)

210a-f — SPECIAL PROBLEMS IN MECHANICAL ENGINEERING. For graduate students having research ability. Each course consists of individual work in one of the various fields of Mechanical Engineering. Laboratory, six hours.

Prerequisite: approval of Head of Department. (3 ea.) (Staff)

211a — ADVANCED ENGINEERING THERMODYNAMICS. Critical treatment of the laws of thermodynamics, temperature scales; application of theory to compressors and internal combustion engines; frequent reference to research papers. Lecture four hours.

Prerequisite: Mech. Eng. 104c or consent of instructor. (4) I, II (Penrod)

211b — ADVANCED ENGINEERING THERMODYNAMICS. Continuation of Mech. Eng. 211a.

Prerequisite: Mech. Eng. 211a. (4) II (Penrod)

212a — ADVANCED FLUID MECHANICS. Fundamentals of hydro- and aero-mechanics treated by the use of vector and tensor calculus. Lecture, four hours.

Prerequisite: Mech. Eng. 107 or consent of instructor. (4) I (Penrod)

212b — ADVANCED FLUID MECHANICS. Continuation of Mech. Eng. 212a.

Prerequisite: Mech. Eng. 212a. (4) II (Penrod)

213a — ADVANCED HEAT TRANSFER. Application of mathematics to heat transfer, transfer of heat in heat exchangers and furnaces, heat transmission and pressure drop, discussion of research papers. Lecture, four hours.

Prerequisite: Mech. Eng. 107, 129 or equivalent. (4) I (Baker, Penrod)

213b — ADVANCED HEAT TRANSFER. Continuation of Mech. Eng. 213a.

Prerequisite: Mech. Eng. 213a. (4) II (Penrod)

214a, b — SPECIAL PROBLEMS IN AERONAUTICAL ENGINEERING. Advanced course in aircraft power plant engineering dealing with special problems in reciprocating engines, gas turbines, and jet propulsion. Aeronautical Laboratory, nine hours.

Prerequisite: approval of Head of Department. (3 ea.) I, II (Meyer, Savage)

215a-d — SEMINAR. Review of current literature in the field of Mechanical Engineering, general discussion and presentation of papers on departmental research. Required of all graduate students. Two hours.

(1 ea.) (Penrod, Carter, Knight)

216 — STEAM TURBINES. Steam turbine cycles; flow of steam through nozzles and blades; internal losses; reheat factor; regenerative feed heating;

turbine performance at varying loads; mixed-pressure turbines; construction of nozzles and diaphragms.

Prerequisite: approval of Head of Department. (4) (Penrod)

217 — GAS TURBINES AND JET PROPULSION. Momentum, energy, and thermodynamics of gas flow; performance calculations; centrifugal, axial-flow, and Lysholm compressors; gas turbine cycles and characteristics; combustion chamber; aircraft, stationary, marine, and locomotive power plants; rockets.

Prerequisite: approval of Head of Department. (4) (Meyer)

218 — ADVANCED GEAR DESIGN. Fundamentals of gearing; involute trigonometry; design of planetary gear systems and transmission; study of gear forms such as bevel, helical, worm and spiral; study of gear manufacturing methods. Lecture and recitation, three hours.

Prerequisite: Mech. Eng. 100b. (3) (Carter)

500-1, 2, 3 — THESIS. (0) I, II, S (Staff)

METALLURGICAL ENGINEERING

121 — FUEL AND METALLURGICAL LABORATORY. Analysis of ores, slags and other metallurgical products by both wet and dry methods; determinative methods utilized in the analysis of fuels. Laboratory, six hours.

Prerequisites: Chem. 21a, and Met. Eng. 27. (2) I, II (Kendall)

128 — METALLURGY OF NON-FERROUS METALS. Principles and processes employed in the production and preparation of copper, lead, aluminum, and other non-ferrous metals; consideration of the strategic and economic importance of these metals. Lecture and recitation, three hours.

Prerequisite: Met. Eng. 27. (3) I, II (Crouse)

132 — METALLURGICAL CALCULATIONS. Calculations involved in the practical application of metallurgical principles both general and specific. Recitation and problems, five hours.

Prerequisites: Chem. 21a; and Met. Eng. 29, 128. (5) I, II (Crouse)

140 — THE SCIENCE OF METALS. First course in physical metallurgy; correlation of structures of metals and alloys to their physical properties together with the effects of mechanical work and heat. Lecture and recitation, three hours.

Prerequisites: Phys. 3b; Chem. 21a; and Met. Eng. 29. (3) I, II (Crouse)

142 — FERROUS METALLOGRAPHY AND HEAT TREATMENT. Correlation of compositions, heat-treatments, microstructures and properties of ferrous metals and alloys. Engineering, tool, heat-resistant and corrosion-resistant ferrous alloys, and cast irons are included. Lecture, two hours; laboratory, three hours.

Prerequisites: Met. Eng. 60, 140. (3) I (Gerhard)

143a — PHYSICS OF METALS. Radiography and x-ray metallography; structural metallurgical topics; elastic, plastic properties; diffusion; solubility of gases; introduction to electron and band theory of solids. Lecture and recitation, two hours; laboratory, three hours.

Prerequisites: Phys. 123b; Chem. 140b; and (3) I (Hammond)

Met. Eng. 140.

143b — PHYSICS OF METALS. This is a continuation of Met. Eng. 143a without the laboratory. Lecture and recitation, three hours.

Prerequisite: Met. Eng. 143a.

(3) II (Hammond)

144 — NON-FERROUS METALLOGRAPHY AND HEAT TREATMENT. Correlation of compositions, heat-treatments, microstructures and properties of non-ferrous metals and alloys. Commercially pure metals; and solid solution, cold-working, age-hardenable, and martensitic-type alloys are considered. Lecture, two hours; laboratory, three hours.

Prerequisites: Met. Eng. 60, 140.

(3) II (Hammond)

164 — ELEMENTS OF LOW TEMPERATURE CARBONIZATION. Principles involved in the low temperature treatment of coals and other carbonaceous materials, including hydrogenation. Lecture and recitation, three hours; assigned reference reading.

Prerequisites: Phys. 123b; and Chem. 140b.

(3) I, II (Crouse)

166 — MINERALS BENEFICIATION. Principles and mechanics of beneficiation involved in the preparation of mine products, principles of plant design, and current developments. Lecture and recitation, five hours.

Prerequisites: Chem. 21a; Phys. 3b; and
Met. Eng. 26 or 27.

(5) II (Spokes)

167 — MINERALS BENEFICIATION LABORATORY. Application of the principles studied in Met. Eng. 166. Laboratory, two hours.

Concurrent with Met. Eng. 166.

(1) II (Spokes)

175a, b — SEMINAR. General discussions of metallurgical subjects; preparation and delivery of papers and reports; extemporaneous speaking, and the briefing of technical books and articles in current literature. Two hours.

Prerequisite: six semesters in metallurgical
engineering.

(1 ea.) I, II (Staff)

207 — ADVANCED PRODUCTION METALLURGY. Principles and practices used in the production of alloys; with special stress upon any particular group of alloys that the student may choose. Reference reading and laboratory work are emphasized. Lecture, two hours; laboratory, eight hours.

(3) I, II (Crouse, Gerhard)

209 — ADVANCED ORE DRESSING. Ore dressing plant design and original research in concentration problems. Lecture and recitation, two hours; laboratory, eight hours.

(6) I, II (Spokes)

210 — TECHNOLOGY OF LOW TEMPERATURE CARBONIZATION. Principles and practices employed in low temperature carbonization of carbonaceous materials such as oil shales, bituminous and cannel coals. Lecture and recitation, two hours; laboratory, eight hours.

Prerequisite: permission of Head of Department.

(6) I, II (Crouse)

213 — X-RAY METALLOGRAPHY. Crystallography; x-ray theory. Laue, rotation-crystal, powder x-ray diffraction methods; special cameras; structure-factor equations; reciprocal lattice; stereographic, gnomonic projections; poles figures; stress-strain analysis, phase diagrams; electron diffraction. Lecture, three hours; laboratory, three hours.

Prerequisite: Phys. 119.

(4) I, II (Hammond)

214 — THEORETICAL STRUCTURAL METALLURGY. Interatomic forces of crystal bonding, free electron; zone theory; equilibrium and rate of approach thereto, thermal behavior, structure, free energy of alloy phases; equilibrium diagrams; diffusion; order-disorder change; nucleation and phase growth. Lecture, two hours.
(3) I, II (Hammond)

215 — SPECIAL-PURPOSE ALLOY STEELS. Fundamental principles of the more complicated and special alloy steels and their heat treatment. Carbon, mild alloys, N.E., S.A.E., tool and super alloys are included. Alternate alloy steels for application are considered. Lecture, three hours.
(3) I, II, S (Crouse, Hammond)

216 — THE PHYSICAL CHEMISTRY OF STEEL MAKING. Reactions involved in steel making processes. Slag constitution, slag control, and effects of additions to liquid metal. Influences of melting, refining, and deoxidizing practices on properties of finished steel are emphasized. Lecture, five hours; laboratory, three hours.
(3) I, II (Crouse, Gerhard)

217 — THE MICROSCOPY OF SLAGS AND REFRACTORIES. Identification of phases in slags. Emphasis is placed on the interpretation of microstructural features as indicators of high temperature reaction tendencies among silicate and oxide systems. Lecture and recitation, one hour; laboratory, six hours.
(3) I, II (Gerhard)

218 — DIFFUSION AND HEAT FLOW IN METALS. Fick and Fourier equations applied to diffusion and solid state transformations, and to the heating and cooling of metals in metallurgical processes. Radiation convection, and conduction are considered in principles of furnace design. Lecture, two hours.
(2) I, II (Hammond)

220 — CRYSTAL PLASTICITY. Fundamentals of plastic deformation in metals. Topics will include crystallography, slip, twinning, strain hardening, recovery, cold working, cold-worked and recrystallization textures. Heyns stresses, creep and similar subject matter. Lecture and recitation, three hours.
(3) I, II (Hammond)

221 — ADVANCED PHASE DIAGRAMS. Review of thermodynamic fundamentals and application to binary pressure-temperature-composition diagrams. Construction and interpretation of ternary temperature-composition diagrams. Review and discussion of important ternary diagrams. Lecture and recitation, three hours.
Prerequisite: Chem. 244.
(3) I, II (Hammond)

222 — CORROSION. Corrosion mechanisms, including the electrochemical theory, fundamentals of oxidation and tarnish, passivity and effects of crystal orientation on corrosion. Corrosion of various engineering materials in various environments and testing. Lecture, two hours; laboratory, three hours.
(3) I, II (Gerhard)

223 — METALS AT HIGH TEMPERATURE. Fundamental considerations involved in high temperature behavior of metals. Test methods and equipment for elevated temperature testing. A review of the commercial alloys for high temperature use and study of current literature. Lecture, two hours.
(3) I, II (Hammond, Gerhard)

224 — MATERIALS ENGINEERING. Various factors in specification and testing of materials. Materials for lightweight construction, mechanical and

electrical applications, and severe service conditions are treated. Material failures, trouble shooting and testing are discussed. Lecture, two hours; laboratory, three hours.
(3) I, II, S (Hammond, Gerhard)

240a-f — SPECIAL PROBLEMS, LITERATURE AND LABORATORY. Literature research and planning of research programs; shop problems and technical writing, including a term paper, are required. Laboratory, six hours. Consultation and lecture by appointment.
(3 ea.) I, II (Staff)

275a-h — SEMINAR. Review of current literature in the field of metallurgical engineering and presentation of papers thereon. Presentation of talks on departmental research. Group and panel discussions. Required of all graduate students. Two hours.
(1 ea.) I, II (Hammond)

500-1, 2, 3 — THESIS.
(0) I, II, S (Staff)

MINING ENGINEERING

126 — ELEMENTS OF MINING. The origin of mineral deposits, prospecting, and mine development. Lecture and recitation, four hours; laboratory, three hours.

Prerequisites: Chem. 1b; Phys. 3b; and Geol. 12b.
(5) I (Spokes)

127a, b — MINING TECHNIQUES. The techniques and economics of exploitation of mineral deposits. Min. Eng. 127a, lecture and recitation, five hours; Min. Eng. 127b, lecture and recitation, four hours.

Prerequisite: Min. Eng. 126.
(5, 4) I, II (Staff)

129 — MINE VENTILATION AND DRAINAGE. The conditioning of underground mine atmospheres and the drainage or underground mine workings. Lecture and recitation, five hours.

Prerequisite: Min. Eng. 126.
(5) II (Spokes)

130 — MINE ADMINISTRATION. The engineering aspects of mine administration and management, and practice in the fundamentals of mine plant design. Lecture, and recitation, two hours; laboratory, three hours.

Prerequisite: Min. Eng. 126.
(3) I (Spokes)

131 — MINE SURVEYING. Given at summer surveying camp at Camp Robinson, Noble, Breathitt County, Kentucky. Field practice in mine surveying and mapping.

Concurrent: Civ. Eng. 15, 16b.
(1) S (Staff)

132 — MINE RESCUE TRAINING AND FIRST AID. Required of mining engineers. Fundamental principles of mine rescue training and first aid. Given on University campus by Kentucky Department of Mines and Minerals, U. S. Bureau of Mines or both in collaboration.

Prerequisite: junior or senior classification.
(0)

133a, b — COAL PREPARATION. Principles and practice of coal preparation and associated operations. Lecture and recitation, three hours.

Prerequisites: Met. Eng. 166, 167.
(3 ea.) a, I; b, II (Spokes)

175a, b — SEMINAR. The preparation and delivery of papers and reports on mining subjects, extemporaneous speaking, and the briefing of technical books and articles in the current literature. Two hours.

Prerequisite: six semesters in Mining Engineering.
(1 ea.) I, II (Spokes)

203 — MINE ORGANIZATION. Detailed study of the structure and function of a mining enterprise from both the financial and the engineering standpoints. Lecture and recitation, three hours. (3) I, II (Spokes)

207 — ADVANCED PROSPECTING. Study of the principles involved in the geophysical investigation of the minerals of the earth's crust. Lecture and recitation, two hours. (2) I, II (Spokes)

209 — ADVANCED MINE ENGINEERING. Procedure and methods of collecting and recording data for the systematic development and exploitation of a mining property. Lecture and recitation, three hours; drawing and mapping, eight hours. (7) I, II (Spokes)

220a-f — SPECIAL PROBLEMS IN MINING ENGINEERING. Open to graduate students who have the ability to carry on research. Each course consists of individual work in one of the various fields of Mining Engineering. Laboratory, six hours. (3 ea.) I, II (Spokes)

221a-d — SEMINAR. Review of current literature in the field of Mining Engineering and presentation of papers on departmental research. Required of all graduate students. Two hours. (1 ea.) (Spokes)

500-1, 2, 3 — THESIS. (0) I, II, S (Staff)

VIII. FINE ARTS

ART

As prerequisite to graduate work in art, the Department requires that the student shall have had preliminary work in art equivalent to that required of its majors in art. In general this means the completion of an under-graduate sequence of six to eight full semester courses in drawing, design and painting balanced by four to six courses in the history of art, and a reading knowledge of either French or German. The graduate program in art provides for creative work in painting, design, etc., study and research in history and criticism of art, and also in the field of art education. Any of these may be emphasized. In every case a written thesis is required.

The department is housed in a modern building with special equipment. Studios for practical work are designed to meet professional standards. An art library adjoins the classrooms. There are extensive collections of photographs, color reproductions, and related art reference materials. An exhibition gallery provides for the study of original works of art. The Department itself has a working collection of paintings, prints and drawings.

* 116a, b — PRINTMAKING. Technical instruction in printmaking processes: lithography, etching, wood cut. Open to advanced students. Six studio hours. *Prerequisites: Art 63 and 65a.* (2) I, II (Sternbergs)

138 — NORTHERN RENAISSANCE ART. The arts of the Renaissance and Reformation outside Italy from the late middle ages through the sixteenth century. Northern humanism; analyses of style; study of individual masters. Illustrated lectures and reports. (2) I (Rannells)

140 — ITALIAN RENAISSANCE ART. The arts of the Renaissance in Italy from the late middle ages through the sixteenth century. Italian humanism; analyses of style; study of individual masters. Illustrated lectures and reports. (3) I (Rannells)

141 — BAROQUE ART. The arts of the Reformation and Counter-Reformation in Europe from the mid-sixteenth century through the eighteenth century. The Baroque and Rococo styles; study of individual masters. Illustrated lectures and reports. (3) II (Rannells)

142 — MODERN ART. The arts in Europe and America from the mid-eighteenth century through the nineteenth century. Consideration of social and economic changes in relation to art; study of individual artists. Illustrated lectures and reports. (3) I (Rannells, Amyx)

143 — CONTEMPORARY ART. The arts of the twentieth century in Europe and the Americas. Consideration of social and technological changes in relation to art; study of individual artists. Illustrated lectures and reports. (3) II (Amyx, Rannells)

145a — HISTORY OF ARCHITECTURE. A survey of architectural developments from ancient times through the 18th century. Analyses of classic, medieval, renaissance and baroque styles. Illustrated lectures and reports. (2) I (Rannells)

145b — HISTORY OF ARCHITECTURE. A study of modern architecture, 19th and 20th centuries. Emphasis on contemporary developments. Illustrated lectures and reports. (2) II (Rannells)

147 — ART IN AMERICA. A survey of American architecture, sculpture, painting, illustration, handicrafts, industrial design, etc., from Colonial times to the present. American museums, exhibitions, sales. Illustrated lectures and reports. (2) S (Rannells)

151 — CRITICISM OF ART. Analyses, interpretations, evaluations. Fundamentals of aesthetics and criticism in history, and in the contemporary arts. Discussions and reports. Open only to senior and graduate majors in Philosophy, Literature, Music and Art. (3) II (Amyx)

153 — AESTHETICS. Problems of method in aesthetics; major types of aesthetic theory. Aesthetic materials of the arts, in literature, music and the space arts. Form and types of form. Meaning in the arts. Interrelations of the arts. Lectures, discussions, reports. (3) I (Amyx)

155 — ART IN ELEMENTARY SCHOOLS. An advanced course for in-service teachers in elementary schools. Programs of instruction related to the developmental levels of vision and expression in the child. Lectures, conferences, studio work and reports. Given in collaboration with the College of Education. (2) S (Fitz)

157 — ART IN THE SECONDARY SCHOOL. Art for teachers in secondary schools. The literature of art education. Courses of study. Teaching materials. Lectures, conferences, and reports. (3) S (Rannells, Amyx)

160a, b — SEMINAR IN ART. Current problems in art; correlations of theory and practice; discussions and reports. For seniors and graduates majoring in art. The Seminar is prerequisite to the comprehensive examination required for graduation. (1) I, II (Staff)

165a, b — INTERMEDIATE PAINTING. Advanced problems in space and color construction. Introduction to figure and portrait. Individual development of basic painting procedures. Nine studio hours.
Prerequisites: Art 63 and 65b. (3) I, II, S (Amyx)

167 — PROFESSIONAL PAINTING TECHNIQUES. Advanced problems in painting media: oil and tempera. Historical and contemporary procedures in painting and closely related media. Open to advanced students. Nine studio hours.
Prerequisite: Art 165b. (3) I, II (Amyx)

175a-d — INDEPENDENT WORK: HISTORY, CRITICISM. Individual research and writing: history, criticism, aesthetics, etc. Collaboration with other humanistic disciplines. Each semester's work is subject to review by the staff. Open only to advanced students. (3) I, II, S (Staff)

177a-d — INDEPENDENT WORK: PAINTING, PRINTMAKING. Individual research and experimental work in technical and theoretical problems of drawing and painting, printmaking, etc. Each semester's work is subject to review by the staff. Open only to advanced students. (3) I, II, S (Staff)

179a-d — INDEPENDENT WORK: DESIGN, CONSTRUCTION. Individual research and experimental work in technical and theoretical problems

of design and construction of forms, including sculpture. Each semester's work is subject to review by the staff. Open only to advanced students.

(3) I, II, S (Staff)

Note: The independent work courses provide for the student of special interests and abilities and enable him to supplement the work of regularly scheduled courses, including those in the field of art education.

MUSIC

The Department of Music requires, as prerequisite for the Master's degree with a major in music, the equivalent of that required for the A.B. degree in music at the University of Kentucky. If the transcript of the undergraduate record of a student from another university or college does not show that the student's program of work is substantially equivalent to that required for a bachelor's degree at the University of Kentucky, additional undergraduate work will be required before the student is admitted to full graduate status.

A reading knowledge of one modern foreign language is required of all candidates for the Master of Arts Degree.

Thesis

The candidate may choose as a subject for a thesis an approved research problem in the field of music education.

For those students whose primary interest is music education it is recommended that they work toward the Master of Arts in Education. See page 120.

102a, b — VOCAL PEDAGOGY. The study of physical and psychological problems in the teaching of voice production, the study of breath control, diction, resonance, interpretation, and repertoire.

(2) I, II, S (Kiviniemi, Holloway)

103a, b — PIANO PEDAGOGY. A study of teaching methods and materials.

(1) I, II, S (Montgomery)

106a, b — PIANO LITERATURE. A survey of music written for the piano, emphasizing problems in performance of standard piano literature.

(2) I, II, S (Patch)

107a, b — VOCAL LITERATURE. A study of the development of the Art Song, Opera, Oratorio, and Cantata.

(2) I, II, S (Kiviniemi)

108a, b — HISTORY AND LITERATURE OF THE ORGAN. A study designed to give the student a practical knowledge of the development of the organ, its construction, the literature, and teaching materials.

(2) I, II, S (Blackburn)

110 — RESEARCH PROBLEMS IN PEDAGOGY OF THEORY. An independent course in the teaching of counterpoint and theory to be selected by the instructor on the basis of prerequisite training and practical need.

(2) (Kinney, Wright)*

111 — RESEARCH PROBLEMS IN MUSIC. A research course in some phase of music other than history or music theory.

(2) (Staff)*

112 — RESEARCH PROBLEMS IN MUSIC. Continuation of 111.

(2) (Staff)*

* Offered according to demand.

113a, b — COUNTERPOINT. A study of Counterpoint based on 16th Century and 18th Century contrapuntal techniques. Original compositions and analysis.

Prerequisites: Music 34a, b.

(2) I, II, S (Kinney, Wright)

115a, b — CHORAL CONDUCTING. A study of the fundamentals of choral conducting and choral literature, emphasizing materials for the secondary school level.

(2) I, II, S (Lewis)

116a, b — INSTRUMENTAL CONDUCTING. A study of the technique and practice of the fundamentals of instrumental conducting and score reading.

(2) I, II, S

117a, b — ORCHESTRATION. This course includes a study of the individual instruments of the orchestra and band with practice in scoring for these instruments.

(2) I, II, S

118 — MARCHING BAND TECHNIQUE. A study of Marching Band organization and formation planning, including practical instruction in the care and repair of instruments.

(2) II, S

119a, b — COMPOSITION. A beginning course in original composition which affords the student opportunity to compose in the small forms.

(2) I, II, S (Wright)

145 — SUPERVISION. Administrative problem in public school music.

(2) II, S (Lewis)

200a, b — PROBLEMS IN CREATIVE WORK IN HOMOPHONIC FORMS OF COMPOSITION.

(2) (Wright)*

201a, b — PROBLEMS IN CREATIVE WORK IN CONTRAPUNTAL FORMS OF COMPOSITION.

(2) (Wright)*

203 — CHORAL LITERATURE AND TECHNIQUE.

(2) I, S (Lewis)

204 — ADVANCED BAND TECHNIQUE. An advanced course with concentration on band organization and materials. Conducting, and band arranging.

(2) II, S (Prindl)

208a-c — SEMINAR IN MUSIC. One two-hour meeting is held each week for discussion of current developments in music found in recent books and periodicals.

(1) I, II, S (Stein)

210 — BAROQUE MUSIC. An intensive study of the baroque period.

Prerequisites: Music 19a, b or 120a, b.

(2) I, S (Stein)

211 — THE CLASSIC AND ROMANTIC PERIODS.

Prerequisites: Music 19a, b or 120a, b.

(2) II, S (Stein)

212 — MUSIC IN AMERICA. The history of music in America from Colonial times to the present day.

Prerequisites: Music 19a, b or 120a, b.

(2) (Stein)*

* Offered according to demand.

213 — INTERPRETATION OF INSTRUMENTAL LITERATURE. This course is intended for experienced leaders of school musical organizations, particularly of orchestras and bands.

Prerequisites: Music 117a, b or permission of the instructor. (2) (Prindl)*

214 — ADVANCED INSTRUMENTAL CONDUCTING.

Prerequisites: Music 116a, b. (2) (Prindl)*

215a, b — PIANO.

Prerequisite: eight semester hours of accredited undergraduate study in applied music, piano. (2) I, II, S (Montgomery, Patch)

216a, b — STRINGS.

Prerequisite: eight semester hours of accredited undergraduate study on the string instrument in which graduate work is desired. (2) I, II, S (Wright, Kinney)

217a, b — VOICE.

Prerequisite: eight semester hours of accredited undergraduate study in voice. (2) I, II, S (Houden, Kiviniemi)

218a, b — ORGAN.

Prerequisite: eight semester hours of accredited undergraduate study in organ. (2) I, II, S (Blackburn)

231a, b — WOODWIND INSTRUMENTS.

Prerequisite: eight semester hours of accredited undergraduate study on the woodwind instrument in which graduate work is desired. (2) I, II, S (Adams)

232a, b — BRASS AND PERCUSSION INSTRUMENTS.

Prerequisite: eight semester hours of accredited undergraduate study on the brass or percussion instrument in which graduate work is desired. (2) I, II, S (Prindl)

MUSIC EDUCATION

Graduate Curriculum in Music Education

The following curriculum in Music Education is recommended for teachers of Public School Music leading toward the Master of Arts in Education:

Education 222 — Methodology of Educational Research	3 semester hours
Education 225 — Supervision of Instruction	4 semester hours
Education 251 — Problems in Public School and Community Music	2 semester hours
Education 252 — Field Problems in Music	2 semester hours
Music Education	2 semester hours
Education 253 — Independent Work in	

* Offered according to demand.

Education 254 — Problems in Educational Psychology	3 semester hours
Music 102a, b — Vocal Pedagogy	4 semester hours
Music 110 — Research Problems in Pedagogy of Theory	2 semester hours
Music 111 — Research Problems in Music	2 semester hours
Music 112 — Research Problems in Music	2 semester hours
Music 115a, b — Choral Conducting	4 semester hours
Music 116a, b — Instrumental Conducting	4 semester hours
Music 117a, b — Orchestration	4 semester hours
Music 203 — Choral Literature and Technique	2 semester hours
Music 204 — Advanced Band Techniques	2 semester hours
Music 208a-c — Seminar in Music	3 semester hours
Music 210 — Baroque Music	2 semester hours
Music 211 — Classic and Romantic Periods	2 semester hours
Music 215a, b — Piano	each 2 semester hours*
Music 216a, b — Strings	each 2 semester hours*
Music 217a, b — Voice	each 2 semester hours*
Music 218a, b — Organ	each 2 semester hours*
Music 231a, b — Woodwind Instruments	each 2 semester hours*
Music 232a, b — Brass and Percussion Instruments	each 2 semester hours*

Advisers: Stein, Dickey.

There is no language requirement for the Master of Arts in Education.

A student, wishing to complete the degree requirements on a thirty hour basis without a thesis, must select courses at the "200 level" in the amount of 12 credits approved by the Dean of the College of Education and the Head of the Music Department.

Ed. 251 — PROBLEMS IN PUBLIC SCHOOL AND COMMUNITY MUSIC. This course considers teaching, supervising, organizing, and leading public school and community activities. (2) (Lewis, Worrel)

Ed. 252 — FIELD PROBLEMS. This course is designed to permit the teacher or leader in the field to work out his local problems as an independent graduate teaching project under the guidance of the music staff. (2) (Lewis, Worrel)

Ed. 253 — INDEPENDENT WORK IN MUSIC EDUCATION. This course is designed for graduate students who undertake research problems in music education. (2) (Lewis, Worrel)

* Not more than four credits will be allowed in graduate applied music.

IX. LAW

The following courses in the College of Law are accepted as graduate work when taken by students majoring in Political Science, Economics, Sociology, Commerce or other fields in which such courses are recommended by the major professors. No major programs of study are offered in Law at present leading to advanced degree.

101a, b — CONTRACTS I, II. Anderson's Cases. Formation of contracts, offer, acceptance, consideration, Statute of Frauds, parties affected by contracts, contracts for benefit of third persons, assignments, joint and several contracts, performance of contracts, express and implied conditions, impossibility of performance, and illegal contracts. (3) I, II (Murray)

102a, b — TORTS I, II. Thurston and Seavey's Cases. Intentional torts and defenses, negligence, causation, duties of occupants of land and manufacturers and vendors of chattels, contributory negligence, strict liability, deceit, defamation, malicious prosecution, interference with advantageous relations. (3) I, II (McEwen, Oberst)

103 — PROPERTY I AND II. Casner and Leach's Cases. Basic course in property: possession, gifts, bona fide purchasers of personalty, estates in land before and after, the Statute of Uses, easements, and rights incident to ownership. (4) I (Matthews)

105 — AGENCY. Mechem's Cases (3d edition). Nature of relation, appointment, liabilities of principal for agent's torts, contracts, crimes, liabilities of agents, parties to writing, undisclosed principal doctrines, delegation of agency, termination, and ratification. (2) I (Ham, Stahr)

107a — CRIMINAL LAW. Hall and Glueck's Cases. Jurisdiction; the criminal act, complete and incomplete; criminal intent, actual and constructive; duress and mistake of fact, of law; justification; parties in crime; crimes against the person; and crimes against property. (2) I (Moreland)

107b — CRIMINAL PROCEDURE. Arrest, preliminary examination, bail, methods of prosecution, the grand jury, indictment and information, arraignment and pleas, nolle prosequi and motion to quash, trial, motions after trial. (2) II (Moreland, Stahr)

121a, b — EQUITY I, II. Chafee and Simpson's Cases (2d edition). Basis of equity jurisdiction, specific performance of contracts, reexecution, rescission and cancellation, injunctions in relation to torts, bills of peace, quia timet, interpleaders, and position of equity in the legal system. (3) I, II (Moreland)

122 — PROPERTY III. Martin's Cases. Titles and conveyancing. Adverse possession; prescription; accretion dedication; mode of conveyance at common law, under the Statute of Uses, and under modern statutes; execution of easements by implication; estates; covenants for title; estoppel by deed, and priorities. (3) I (Matthews, Murray)

123 — NEGOTIABLE INSTRUMENTS. Britton's Cases on Bills and Notes (3d edition). A general study of the law of bills and notes following the Uniform Negotiable Instruments Law, including: operative facts of negotiability; transfer; holders in due course; defenses; liability of primary and secondary parties. (3) II (Ham)

141 — PARTNERSHIP. Gilmore's Cases (3d edition). Distinction between partnership and other forms of business association, partnership by contract and estoppel, nature and character of partnership, characteristics of partnership property, powers of partners, termination of partnership. (2) II (Ham)

145 — INSURANCE. Goble's Cases on Insurance. Nature of contract, insurable interest, making the contract, concealment, representations, warranties, implied conditions of forfeiture, waiver and estoppel, rights under the contract, and construction of the policy. (2) II (Ham, Whiteside)

147 — RESTITUTION. Woodruff's Cases. Restitution at law for mistake, duress and undue influence, illegality, impossibility, benefits received under contracts within and without the Statute of Frauds, and benefits received without contracts. (2) S (Murray)

148 — DOMESTIC RELATIONS. Madden and Compton's Cases. Contracts to marry; requisites and incidents of marriage status; annulment, divorce and separation; parent and child; infants and incompetent persons. (2) II (Stahr, Whiteside)

149 — MUNICIPAL CORPORATIONS. Fordham's Local Government Law. Legislative control over municipal corporations; municipal powers — in general; licenses and franchises; appropriation of municipal funds; municipal contracts, torts, property; special assessments. (2) S (Stahr)

150 — PUBLIC UTILITIES. Robinson's Cases (2d edition). Nature and scope of public utility concept — historical and modern; methods of determining rate base; reasonable rates; duty to serve — extent and limitations. (3) S (Moreland)

153 — TAXATION. Griswold's Cases (2d edition). Fundamentals of and problems in federal income, gift and estate taxation. (3) I (Whiteside)

154 — DAMAGES. McCormick's Cases. Nature of damages, avoidable consequences, counsel fees, certainty, compensation, damages for non-pecuniary injuries, interest, damages for death, and eminent domain. (2) S (Oberst)

160a, b — PRIVATE CORPORATIONS I AND II. Stevens and Larson's Cases. Characteristic features of a corporation, formation, powers and liabilities, rights of stockholders, powers and duties of directors, promoters' contracts and responsibilities, dividends, legislative control under modern corporation acts. (4) I (Ham)

161a, b — CONSTITUTIONAL LAW I AND II. Dowling's Cases (4th edition). Judicial review, relationships in the federal system, powers of Congress, powers of the President, powers of the states. Due process, procedural and substantive; obligation of contracts, equal protection, civil rights, privileges and immunities. (2) I, II (Oberst)

162 — PROPERTY IV (Future Interests). Simes' Cases. Types of future interests; construction problems; limitations to classes; rule against perpetuities, illegal restraints and conditions. (3) II (Matthews)

163 — WILLS AND THE ADMINISTRATION OF ESTATES. Mechem and Atkinson's Cases (3d edition). Descent and distribution, the making and revocation of wills. (2) II (Whiteside)

164 — CONFLICT OF LAWS. Cheatham, Dowling and Goodrich's Cases. Nature of the subject, penal laws, procedure, judgments, domicile, capacity, form, particular subjects, litigation, family law, inheritance, foreign administration. (3) II (McEwen, Moreland)

165 — TRUSTS. Scott's Cases (3d edition). Uses and Statute of Uses; trusts as to creation; elements; transfer of beneficiary's interest; administration, termination and modification; charitable trusts; resulting and constructive trusts; powers. (4) I (Matthews)

166 — SALES. Woodward's Cases (3d edition). Contract; transfer, title; conditional sales, documents of titles, destruction of goods, risk of loss; obligations of seller, buyer; rights of unpaid seller against goods; remedies of seller, buyer; express, implied warranties; Statute of Frauds. (3) II (Murray)

167 — ADMINISTRATIVE LAW. Stason's Cases (2nd edition). Establishment of administrative tribunals, limits on discretion. Notice and hearing, orders, methods of judicial relief, scope of judicial review. (3) II (Oberst)

174 — CREDIT TRANSACTIONS. Durfee's Cases on Security. Mortgages; creation, assignment, priority, foreclosure, redemption; pledges, suretyship rights, suretyship defenses, Statute of Frauds. (3) II (Matthews, Oberst)

176 — TRADE REGULATION. Oppenheim's Cases. Unfair competition in promoting sales, obstruction of access to markets, price practices and price policies, combination and monopoly, anti-trust laws. (3) II (Oberst)

178 — CREDITORS' RIGHTS. Hanna and McLachlan's Cases (4th edition). Enforcement of judgments; fraudulent conveyances; general assignments; creditors' agreements; receiverships; bankruptcy, assets, and distribution. (3) II (Ham, Whiteside)

179 — LEGISLATION. Read and MacDonald's Cases. The history of legislation, legislative organization and procedure, legislative drafting, means of making laws effective, types of statutes, parts of a statute, methods of interpretation, and relation of traditional law to legislation. (3) II (Ham, Matthews)

180 — LABOR LAW. Smith's Cases and Materials. History, organization and structure of American labor unions; obligations of employers; questions of representation; privileges and obligations of unions; collective bargaining and dispute settlement. (3) I (Stahr)

183 — LANDLORD AND TENANT. Walsh and Niles' Cases. Characteristics of leases; the creation of the relationship of landlord and tenant; covenants implied in the lease; restrictions on the lessee's use of the property; transfers by the lessor and by the lessee; rent; taxes; repairs; and termination of the relationship. (2) II (Murray)

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FELLOWS AND SCHOLARS

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INDEX

- A -

	Page
Administration, Education	116
Administration, Engineering	133
Admission	7, 13
Advanced Degrees in Engineering	12
Agricultural Education	125
Agricultural Entomology	94
Agriculture	94
Agricultural Entomology	94
Agronomy	94
Animal Industry	96
Animal Pathology	100
Farm Economics	100
Farm Engineering	102
Agronomy	94
Anatomy and Physiology	61
Ancient Languages and Literature	20
Animal Husbandry	96
Animal Industry	96
Animal Nutrition	99
Animal Pathology	100
Anthropology	36
Applied Mechanics	133
Art	149
Astronomy	84, 87

- B -

Bacteriology	62
Biological Sciences	61
Botany	64
Business Education	120

- C -

Calendar, University	3
Chemistry	76
Civil Engineering	134
Classical Languages	21
Commerce	37, 43
Crops	94

- D -

	Page
Dairying	97
Dissertation	15
Distributive Education	126
Doctorate in History	46
Doctor of Education, Requirements for	16
Doctor of Philosophy, Requirements for	13
Doctor's Degree in Economics	39
Dramatic Arts	22

- E -

Economic and Social Aspects of Agriculture	100
Economics	37, 40
Education	112
Administration	116
Agricultural	125
Business	120
Curriculum and Instruction	121
Distributive	126
Elementary	122
Foundations of Education	118
Home Economics	127
Industrial	128
Instruction and Placement	120
Music	123
Physical	129
Secondary	124
Suggested Graduate Curricula	113
Vocational	125, 129
Electrical Engineering	136
Elementary Education	122
Engineering	133
Administration	133
Applied Mechanics	133
Civil	134
Electrical	136
Engineering Drawing	133
Fire Protection and Safety Engineering	134
General	133
Mechanical	140
Metallurgical	144
Mining	147
English	22
Engineering Drawing	133
Extension	9

- F -

	Page
Farm Economics	100
Farm Engineering	102
Fees	8, 9, 13
Fellowships and Scholarships	13
Fellows and Scholars	158
Fine Arts	149
Fire Protection and Safety Engineering	134
Forestry	108
Foundations of Education	118
French	33

- G -

General Requirements for All Advanced Degrees	8
General Requirements for All Master's Degrees	9
Genetics	99
Geography	80
Geology	82
German	27
Graduate Courses of Study	20
Graduate Faculty	5
Graduate Fields of Study	18
Graduate Students Not Candidates for Degrees	17
Greek	21

- H -

Haggin Fellowships and Scholarships	16
History	46
American	47
England and the British Empire	43
European	49
Home Economics	102
Child Development	105
Clothing, Textiles and Related Arts	103
Foods and Nutrition	102
Home Management	106
Institution Management	105
Home Economics Education	127
Horticulture	107
Hygiene and Public Health	66

- I -

	Page
Industrial Education	128
Instruction and Placement	120

- J -

Journalism	29
------------------	----

- L -

Languages and Literatures	20
Language Requirements	10, 14
Latin	20
Law	155
Library Science	30

- M -

Margaret Voorhies Haggin Fellowships	16
Markets and Rural Finance	108
Master of Arts in Education, Requirements for	112
Master of Arts, Requirements for	9
Master of Business Administration	37
Master of Science in Agriculture, Requirements for	10
Master of Science in Home Economics, Requirements for	10
Master of Science in Public Health, Requirements for	11
Master of Science, Requirements for	9
Master's Degrees in Engineering	12
Master's Degree in History	46
Mathematics and Astronomy	84
Mechanical Engineering	140
Metallurgical Engineering	144
Mining Engineering	147
Music	151
Music Education	153

- O -

Oak Ridge Institute of Nuclear Studies Research Program	17
--	----

- P -

	Page
Pharmacy	88
Philosophy	51
Physical Education	129
Physical Sciences	76
Physics	89
Physiology, Anatomy and	61
Plant Pathology	96
Political Science	52
Poultry Husbandry	93
Printing of Dissertation	15
Professional Degrees in Engineering	12
Psychology	67
Public Health, Hygiene and	66

- Q -

Qualifying Examination	14
------------------------------	----

- R -

Radio Arts	32
Research Program at the Oak Ridge Institute of Nuclear Studies	17
Residence	8, 10, 14
Romance Languages and Literatures	33
Rural Sociology	110

- S -

Secondary Education	124
Social Sciences	36
Social Work	56
Sociology	58
Soils	95
Spanish	34
Speech	22

- T -

Thesis	10
Transfer of Credits	9

- U -

University Calendar	3
---------------------------	---

- V -

Vocational Education	125, 129
----------------------------	----------

- Z -

Zoology	72
---------------	----

