

BULLETIN

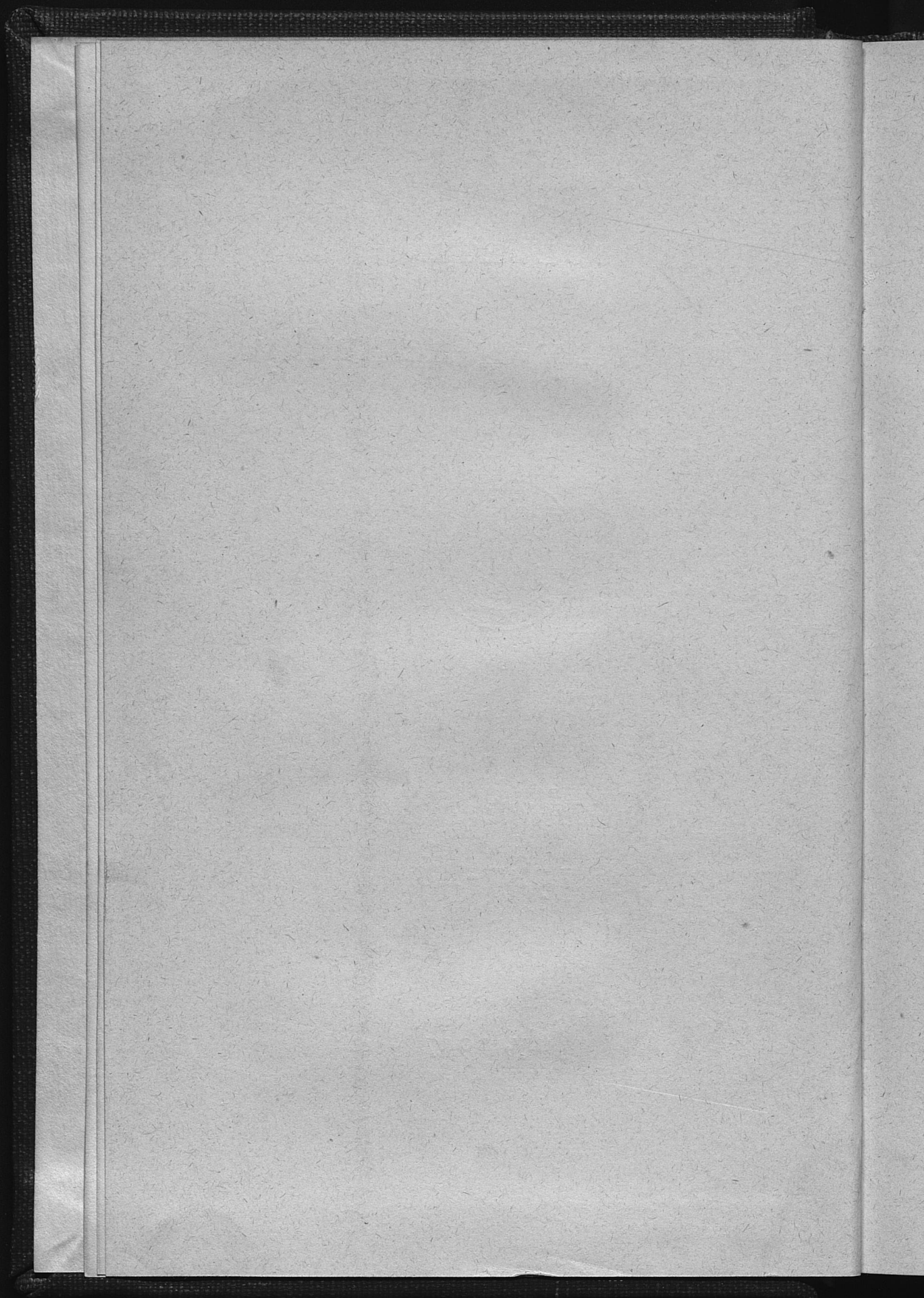
University of Kentucky



Graduate School

1947-48

July, 1947



GRADUATE FACULTY

HERMAN LEE DONOVAN, A. B., M. A., Ph. D., LL. D.
President of the University

WILLIAM DELBERT FUNKHOUSER, A. B., M. A., Ph. D., Sc. D.
Dean of the Graduate School

RICHARD SWEETNAM ALLEN, M. S.	.....	Anatomy and Physiology
CHARLES BARKENBUS, B. S., Ph. D.	.....	Chemistry
HOWARD W. BEERS, B. S., M. S., Ph. D.	.....	Farm Economics
ADOLPH E. BIGGE, M. A., Ph. D.	.....	German
GEORGE K. BRADY, A. B., M. A., Ph. D.	.....	English
ALFRED BRAUER, M. A., Ph. D.	.....	Zoology
JAMES CALVIN, Ph. D.	.....	Psychology
ALEXANDER CAPURSO,		
B. S. in Music, M. A., Ph. D.	.....	Music
CECIL C. CARPENTER, M. S., Ph. D.	.....	Economics
LEO MARTIN CHAMBERLAIN, M. A., Ph. D.		Education
JOHN SHARP CHAMBERS, M. S., M. D.	.....	Hygiene and Public Health
THOMAS D. CLARK, A. B., A. M., Ph. D.	.....	History
CLYDE B. CRAWLEY, M. S., Ph. D.	.....	Physics
CHARLES STEVENS CROUSE, E. M.	.....	Engineering
LYLE R. DAWSON, Ph. D.	.....	Chemistry
GRAHAM B. DIMMICK, Ph. D.	.....	Psychology
HAROLD HARDESTY DOWNING,		
B. C. E., M. S., Ph. D.	.....	Mathematics
W. CLEMENT EATON, Ph. D.	.....	History
STATIE ESTELLE ERIKSON, Ph. D.	.....	Home Economics
ALVIN E. EVANS, M. A., Ph. D., J. D.	.....	Law
EDWARD FRANKLIN FARQUHAR, M. A.	.....	English
ERNEST NEWTON FERGUS, Ph. D.	.....	Agronomy
WESLEY PATTERSON GARRIGUS,		
Ph. D.	.....	Animal Husbandry
CARSIE HAMMONDS, M. S., Ph. D.	.....	Education
HERBERT H. HUMPHREYS, Ph. D.	.....	Psychology
PERRY ELMER KARRAKER, M. A.	.....	Agronomy
GRANT COCHRAN KNIGHT, M. A.	.....	English
OTTO TOWNSEND KOPPIUS, B. S., Ph. D.	.....	Physics
JOHN KUIPER, M. A.	.....	Philosophy
SHELBY T. MCCLOY, Ph. D.	.....	History
ARTHUR CRANE MCFARLAN, A. B., Ph. D.	.....	Geology
FRANK T. MCFARLAND, Ph. D.	.....	Botany
JAMES W. MARTIN, M. A.	.....	Economics
WILLIAM DURRETT NICHOLLS, M. S., Ph. D.		Farm Economics

LOUIS ARTHUR PARDUE, A. B., M. S., Ph. D.	Physics
HUGH BRUCE PRICE, Ph. D.	Markets and Rural Finance
EDWARD WARDER RANNELLS, B. A., M. A.	Art
HERBERT PARKS RILEY, M. A., Ph. D.	Botany
L. HOBART RYLAND, A. B., M. A., Docteur de l'Universite	Romance Languages
IRVIN T. SANDERS, Ph. D.	Sociology
MORRIS SCHERAGO, B. S., D. V. M.	Bacteriology
J. R. SCHWENDEMAN, Ph. D.	Geography
MAURICE F. SEAY, M. A., Ph. D.	Education
JASPER BERRY SHANNON, Ph. D.	Political Science
DUDLEY EUGENE SOUTH, M. A., Ph. D.	Mathematics
OLUS JESSE STEWART, A. B., M. S., Ph. D.	Chemistry
RODMAN SULLIVAN, A. B., A. M., Ph. D.	Economics
WILLIAM SEPTIMUS TAYLOR, M. S., Ph. D.	Education
DANIEL VOIERS TERRELL, C. E.	Engineering
LEE HILL TOWNSEND, Ph. D.	Agricultural Entomology
ARMY VANDENBOSCH, Ph. D.	Political Science
RALPH HOLDER WEAVER, M. S., Ph. D.	Bacteriology
WILLIAM SNYDER WEBB, M. S., Sc. D.	Physics
HAROLD E. WETZEL, B. Sc. in S. A., M. A.	Social Work
MARTIN MARSHALL WHITE, M. A., Ph. D.	Psychology
EDWARD WIEST, A. M., Ph. D.	Economics

UNIVERSITY CALENDAR

1947-48

1947

FALL QUARTER

- September 24-26 Wednesday, 8:00 a. m. to Friday, 5:00 p. m.—
Classification tests, physical examinations,
and advisory conferences for all new
students.
- September 25, 26 Thursday and Friday—Registration and classifi-
cation of former students according to an
alphabetical schedule.
- September 27 Saturday—Registration and classification of
new students.
- September 29 Monday—Class work begins.
- October 6 Monday—Last date on which one may enter an
organized class.
- October 20 Monday—Last date on which one may drop a
course without a grade.
- October 23, 24 Thursday and Friday—Period for filing applica-
tions for degrees.
- November 27 Thursday—Thanksgiving holiday.
- December 15-17 Monday through Wednesday—Examinations for
the Fall Quarter.
- December 17 Wednesday 6:00 p. m., Quarter ends.

1948

WINTER QUARTER

- January 2 Friday, 8:00 a. m.—Classification tests, physical
examinations, and advisory conferences for
all new students.
- January 3 Saturday—Registration and classification of
new students.
- January 5, 6 Monday and Tuesday—Registration and classi-
fication of new and former students ac-
cording to an alphabetical schedule.
- January 7 Wednesday—Class work begins.
- January 14 Wednesday—Last date on which one may
enter an organized class.

January 26	Monday—Last date on which one may drop a course without a grade.
January 30, 31	Friday and Saturday—Period for filing applications for degrees.
March 15-17	Monday through Wednesday—Examinations for the Winter Quarter.
March 17	Wednesday—6:00 p. m.—Quarter ends.
SPRING QUARTER	
March 19	Friday—Classification tests, physical examinations, and advisory conferences for all new students.
March 20	Saturday—Registration and classification of new students.
March 22, 23	Monday and Tuesday—Registration and classification of new and former students according to an alphabetical schedule.
March 24	Wednesday—Class work begins.
March 31	Wednesday—Last date on which one may enter an organized class.
April 12	Monday—Last date on which one may drop a course without a grade.
April 16, 17	Friday and Saturday—Period for filing applications for degrees.
May 30	Sunday—Baccalaureate Services.
June 3-5	Thursday through Saturday—Examinations for the Spring Quarter.
June 4	Friday—Eighty-first Annual Commencement.
June 5	Saturday—6:00 p. m.—Quarter ends.
June 7-12	Monday through Saturday—4-H Club Week.

THE GRADUATE SCHOOL

WILLIAM D. FUNKHOUSER, A. M., Ph. D., Sc. D., DEAN

INTRODUCTORY STATEMENT

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

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
- Doctor of Education (Ed. D.)
- Doctor of Philosophy

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

ADMISSION TO GRADUATE STANDING

Graduates of institutions accredited by the University may be admitted to the Graduate School upon the presentation of a certificate of graduation and an official transcript of undergraduate courses taken. The status of the institution is to be ascertained from the Registrar of the University. Graduates from non-accredited institutions are encouraged to secure a bachelor's degree from an

accredited institution. In particular cases they may be admitted to the Graduate School on the basis of doing additional work before being admitted to full graduate status.

It should be clearly understood that admission to the Graduate School does not necessarily admit a student to full graduate status. A student attains full graduate status only when he has fulfilled all the preliminary requirements of the degree which he seeks and of the department under whose direction he is pursuing graduate work.

Department prerequisites are determined jointly by the Dean of the Graduate School and the respective departments. In brief, it may be stated that such prerequisites usually consist of the equivalent of an undergraduate major. In some fields, the equivalent of an undergraduate minor is sufficient.

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 at this institution.

REGISTRATION

Graduate students should register in the Graduate School on special cards prepared for this purpose.

Applicants from institutions other than this University are also required to file an official transcript showing (a) all undergraduate work covered, (b) graduate work taken, if any, and (c) degrees received.

If the record submitted to the Registrar entitles him to admission he should confer with the Dean of the Graduate School and his major professor concerning preliminary requirements that he may have to satisfy and as to the graduate courses that he should take.

Preliminary requirements may be added from time to time as found necessary and all such requirements, together with graduate courses, must be recorded in the Registrar's Office and must be satisfied by the student before he is eligible for the degree for which he is registered.

All courses listed in this bulletin, and all courses which may appear later in the regular University catalog, which have numbers above 100, may be counted as credit toward a graduate degree, provided that courses numbered 100 to 199 inclusive, may receive graduate credit only with the approval of the student's graduate committee. A grade of D in a course will not be given graduate credit or residence. No graduate credit is given for courses taken by correspondence or class extension.

FEEES

Registration fees per quarter are the same as for undergraduate students in the college in which the major work is done, that is, \$35.00 for residents of Kentucky; \$55.00 for non-residents. This

does not include a general deposit of \$6.00 nor a health service fee of \$2.50.

Before the advanced degree is conferred, a fee of fifteen dollars must be paid at the Comptroller's Office of the University. This covers the graduation fee, diploma fee, fee for binding thesis and all other incidental fees.

APPLICATION FOR DEGREE

All candidates for degrees are required to make formal application for the degree at the office of the Registrar, on special cards provided for that purpose, at least four weeks prior to the date on which the degree is to be conferred.

REQUIREMENTS FOR ADVANCED DEGREES

A graduate student is expected to familiarize himself with the requirements for the degree for which he is a candidate and is held responsible for the fulfillment of these requirements. This applies to the last dates on which theses may be accepted, the dates for examinations, the proper form for theses and all other matters regarding requirements for degrees.

The University of Kentucky offers the degree of Doctor of Philosophy in the twelve departments listed on page 7 of this bulletin, the regular academic degrees of Master of Arts and Master of Science in all departments, and professional degrees in Public Health, Education, Engineering, Agriculture and Home Economics. The requirements for these various degrees are as follows:

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

CREDITS

The candidate shall complete thirty-six quarter hours of graduate work in course with a standing of 2 and no grade below C shall be counted.

COURSES

The major field shall comprise, as to courses, two-thirds of the work and with electives (within the department or allied departments) of one-third of the work, except in the field of Education in which one-half of the work must be in the major subject. The two shall have graduate relationship. All of the work may be taken within one department if the student desires.

RESIDENCE

The minimum residence requirement is one academic year of 36 weeks. This residence requirement may be fulfilled by any combination of quarters which total 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 make a

longer period necessary. Part-time work during a quarter is evaluated on the basis of the amount of work carried, but the amount of residence for part-time work is limited, except for graduate assistants and part-time instructors, to not more than four weeks in any one quarter.

TRANSFER OF CREDITS

No transferred credits are accepted toward the Master of Arts or Master of Science degrees. All work for these degrees must be done at the University of Kentucky. However, a student is not asked to repeat a course which he has satisfactorily completed at another institution.

THESIS

A thesis is required of every candidate. Two typewritten copies of the completed thesis must be presented before the date set for the oral examination. One copy is presented to the Dean of the Graduate School to be bound and placed in the University Library and the other to the major professor to be retained by the department concerned.

The Graduate School issues a special bulletin giving definite instructions regarding the form in which the thesis must be presented, and stating the University regulations regarding the style of cover page, title page, biographical sketch, etc., which must be followed. Students are required to observe these instructions in submitting theses and dissertations.

LANGUAGE REQUIREMENT

A reading knowledge of at least one modern foreign language is required. This language should be pertinent to the program of the student. The language requirement must be satisfied by an examination given by the foreign language department offering instruction in the language concerned. The passing of this examination shall satisfy one of the two language requirements for the doctorate.

EXAMINATIONS

Examinations on regular class work are taken by all resident graduate students. A final *oral examination* is given the candidate not later than fifteen days before the close of the quarter. The Dean appoints an examining committee of at least three members for the purpose, selecting its members from the major and minor professors under whom work is done. The dean is *ex officio* a member of all such examining committees. The candidate is asked to defend his thesis and is examined on any subject matter related to his field.

REQUIREMENTS FOR THE DEGREES OF MASTER OF ARTS IN EDUCATION AND MASTER OF SCIENCE IN EDUCATION

The professional degrees of Master of Arts in Education and Master of Science in Education are open to students who have re-

ceived either the degree of B. A. or B. A. in Education, or the degree of B. S. or B. S. in Education.

Two plans are provided for satisfying the requirements for either of these degrees as follows:

1. Thirty-six quarter hours in graduate courses exclusive of the thesis with an average standing of 2 or better, one academic year (36 weeks) in residence, and an acceptable thesis. No grade below C is counted toward an advanced degree.
2. At the option of the department (not of the student) the master's degree in education may be granted upon the completion of 54 quarter hours in graduate courses with an average standing of 2 or better, 48 weeks in residence, and no requirement of a thesis.

There is no language requirement for either of the professional degrees in education. No student may satisfy more than one-half of the requirements for advanced degrees in the College of Education by part time work.

REQUIREMENTS FOR THE DEGREES 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 36 quarter hours of graduate work with an average standing of 2 or better, 36 weeks in residence, and a thesis, or
2. The completion of 54 quarter hours of graduate work with a standing of 2 or better, 48 weeks in residence, and no thesis requirement.
3. Under either plan no grade below C may be counted.
4. One-half of the work must be in one department, the remainder in any other department or departments approved by the major professor.
5. 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 quarter 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 same.

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 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 54 quarter hours in graduate courses and 48 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 54 quarter hours in graduate courses and 48 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. Thirty-six quarter hours in graduate courses with an average standing of 2 or better.
2. No grade below C may be counted.
3. Thirty-six weeks in residence.
4. An acceptable thesis.
5. The passing of a final comprehensive examination.
6. 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. Thirty-six quarter hours in graduate courses with an average standing of 2 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 the 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.

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

FEES. Except for part time work the fees for a resident student who is a candidate for a master's degree in engineering are the same as for undergraduates. (See the regular University catalog.) The fees for a professional degree are \$15.00 for registration and \$15.00 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, passes the required examination in the subjects, presents a satisfactory dissertation, and is deemed worthy of 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 a scholarship should be shown by a thorough acquaintance with present knowledge in his special field of learning and a marked capacity for research.

REQUIREMENTS FOR APPLICANT

ADMISSION

Admission to the Graduate School and acceptance of advanced credits from other institutions must first be approved by the Registrar.

In order to be accepted as an *applicant* for the degree of Doctor of Philosophy the student must present evidence that he has completed an undergraduate course and has received his baccalaureate degree from a college of recognized standing.

The Graduate Committee reserves the right to decide in each case of applicancy for a degree whether the prerequisite training has been satisfactory and, if any of the years of advanced work have been passed in another institution, whether they may be properly regarded as having been spent under suitable guidance and favorable conditions. Private study is not considered as equivalent to univer-

sity work. In any case the student must pass the qualifying examinations at the University of Kentucky and spend the last year of the residence requirement at this 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 who will appoint a special committee for that student. This special committee, the chairman of which shall be his major professor, 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, passed the qualifying examinations, and has made formal application to be so enrolled.

COURSES OF STUDY

Every applicant for the degree must select one major and at least one and not more than two minor subjects.

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.

REQUIREMENTS FOR CANDIDATES

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. Neither time spent in study, however long, nor the accumulation of facts, however great in amount, nor the completion of advanced courses, however numerous, can be substituted for independent thinking and original research.

Work done in other institutions of learning may be accepted toward the doctorate at the University of Kentucky but no work is credited which has not been done in a college or university of recognized standing or in a research laboratory.

LANGUAGE REQUIREMENTS

The applicant must give evidence of having a good reading knowledge 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 and these examinations must be taken at the University of Kentucky. Ordinarily French and German are expected to be offered, but other languages may be substituted on recommendation of the special committee if it is considered that such languages are of greater importance in the special field of work. The language requirements must be satisfied before the applicant can be admitted to the qualifying examination.

QUALIFYING EXAMINATION

Applicants for the degree of Doctor of Philosophy are required to pass a Qualifying Examination. This examination should be taken during the last quarter of the second year of residence. The examination shall be both oral and written and shall cover both major and minor subjects. It shall be prepared and given to the applicant by a committee of five to be appointed by the Dean of the Graduate School. The language requirements must have been met before the qualifying examination is taken. No applicant is eligible for 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. If the applicant passes the qualifying examination he is then considered as a *candidate* for the degree and may make formal application for this rating.

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 dissertation and an abstract 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 four weeks before the final examination.

PRINTING OF DISSERTATION

One hundred printed copies of the dissertation must be presented to the University within one year from the time when 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 same 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 fulfilment 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 so 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 DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education are exactly 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 108 quarter hours are 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. The award is paid in ten equal monthly installments and does not include a remission of tuition or other University fees. The appointments are made for one year only but may be renewed if it can be shown that the prosecution of research should continue.

These fellowships and scholarships are open to students who hold a bachelor's degree from any college or university in good standing, provided the student has shown some special aptitude for the line of work he desires to pursue. No student should apply for the award 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 CANDIDATES FOR A DEGREE

Graduate students who are not candidates for an advanced degree are not required to designate major or minor subjects, but may elect their work with a view to the special purpose 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 upon the same conditions that are imposed upon those who are 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 a candidate for a degree, the number of quarter hours he is to receive for work already done will be determined at the time he applies for admission to candidacy 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.

GRADUATE FIELDS OF STUDY

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

I. LANGUAGES AND LITERATURES

- Ancient Languages
- English
- German
- Journalism
- Library Science
- Romance Languages

II. SOCIAL SCIENCES

- Anthropology (See Biological Sciences)
- Commerce
- Commercial Education (See Education)
- 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
- Bacteriology
- Botany
- Entomology (See Agriculture)
- Horticulture (See Agriculture)
- Hygiene
- Psychology
- Zoology

IV. PHYSICAL SCIENCES

Chemistry
Engineering (See Engineering)
Geography
Geology
Mathematics and Astronomy
Physics

V. AGRICULTURE

Agricultural Education (See Education)
Agricultural Economics
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
Agricultural Education
Commercial Education
Educational Psychology
Elementary Education
History of Education
Home Economics Education
Philosophy of Education
Physical Education
Secondary Education

VII. ENGINEERING

Civil Engineering
Electrical Engineering
Mechanical Engineering
Metallurgical Engineering
Mining Engineering

VIII. FINE ARTS

Art
Music

IX. LAW

GRADUATE COURSES OF STUDY

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

I. LANGUAGES AND LITERATURES

ANCIENT LANGUAGES AND LITERATURES

LATIN

109a—LATIN LITERATURE (Selections). The authors read will probably be: Juvenal (Selected Satires); Martial (Selected Epigrams); Suetonius (Two of the Lives); Seneca (Essays). These writers will be read for their literary value, and for the light they throw on the political and social life in Rome at the close of the first century, A. D.

Prerequisite: Latin 7 or 8 (3) I (Jones)

109b—LATIN LITERATURE (continuation) (3) II (Jones)

109c—LATIN LITERATURE (continuation) (3) III (Jones)

110a—LATIN LITERATURE. The authors and selections read will be those that have not been read by any member of the class. These will probably be one or more plays and selections from the letters and philosophical writings of Cicero.

Prerequisite: Latin 7 or 8 (3) I (Jones)

110b—LATIN LITERATURE (continuation) (3) II (Jones)

110c—LATIN LITERATURE (continuation) (3) III (Jones)

114a—LATIN COMPOSITION. This course will begin with easy passages in connected discourse and will proceed to more difficult selections.

Prerequisite: Latin 5 (1) I (Jones)

114b—LATIN COMPOSITION (continuation) (1) II (Jones)

120—GREEK CIVILIZATION (given entirely in English). A brief review of Ancient Greek history; the private and public life of the people; archaeology.

(3) I (Jones)

121—ROMAN CIVILIZATION (given entirely in English). A brief review of Roman history; private and public life of the Romans; Roman archaeology.

(3) I (Jones)

122a—GREEK LITERATURE IN ENGLISH TRANSLATION. Epic and Lyric poetry, beginning with Homer.

(3) II (Jones)

122b—GREEK LITERATURE IN ENGLISH TRANSLATION. History, oratory, philosophy, drama.

(3) III (Jones)

150a—TEACHERS' COURSE IN LATIN. Based on First Year Latin.

(3) IV (Jones)

150b—TEACHERS' COURSE IN LATIN. Based on Second Year Latin.

(3) IV (Jones)

151a-d—COURSE IN INDIVIDUAL WORK. The work assigned will depend upon the needs of the student.

(3) I, II, III, IV (Jones)

201a—LATIN PASTORAL POETRY. Based on Virgil's Eclogues and Georgics, together with selection from other authors.

(3) II (Jones)

201b—LATIN ELEGIAC POETRY. Selections from Catullus, Tibullus, Propertius, and Ovid.

(3) III (Jones)

GREEK

149—FREEMAN AND LOWE'S GREEK READER, together with easy selections from other writers.

(3) III (Jones)

152—ANABASIS. Selections from books 2-4 of the Anabasis and from other authors of equal difficulty.

Prerequisite: Greek 149.

(3) I (Jones)

153—HOMER. The Iliad, books 1-6. The Homeric Question, Life in the Homeric Age.

Prerequisite: Greek 149.

(3) I (Jones)

154—PLATO. The Apology, Crito, and Selections. Socrates as a moral teacher, his pupils and methods of investigation.

Prerequisite: Greek 149.

(3) II (Jones)

155—HERODOTUS (Selections). A rapid survey of Greek History from the Ionic Revolt to the end of the Persian Wars.

Prerequisite: Greek 149.

(3) III (Jones)

ENGLISH

The Department of English 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 quarter hours of English must be offered, including seminar. A maximum of twelve quarter hours in other subjects is permitted, 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 before receiving the degree.

The Department will accept candidates for the Doctor's degree in the fields of later American Literature, Eighteenth Century and Linguistics.

102—HISTORY OF THE ENGLISH LANGUAGE. A survey of the development of the language, based upon Emerson's *History of the English Language*; other readings upon various phases of language development.

(5) I

105—CHAUCER. The principal works of Chaucer will be read. Each student will prepare one lead.

(5) II

106a—ENGLISH ROMANTIC POETRY. A rapid survey of the characteristics of the classical period, and a more careful study of growing signs of Romanticism in the early part of the eighteenth century. The French Revolution and its influence on the chief poets of the Romantic Movement. Special emphasis on Wordsworth, Byron, Shelley, Keats and other prominent poets of the first quarter of the nineteenth century.

(5) I (Ward)

106b—ENGLISH ROMANTIC PROSE. This course is designed to continue the study of ideas developed in English 106a as revealed in Rousseau, Godwin, Coleridge, Hazlitt, Lamb, DeQuincey, the Gothic romance, and Scott.

(5) II (Ward)

107a—VICTORIAN POETS. 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.

(5) II (Brady)

107b—VICTORIAN PROSE. A careful study of Carlyle, Ruskin, Newman, Spenser, Arnold, Huxley, and related writers of the period in the field of prose. Assigned parallel readings, class discussion, and lecture.

(5) III (Brady)

108a—PRINCIPLES OF LITERARY CRITICISM. The course attempts to show criticism as a growth and development in an historical survey and to give a corpus of opinion about literature.

(5) I (Farquhar)

108b—PRINCIPLES OF LITERARY CRITICISM. A continuation of 108a.

(5) II (Farquhar)

109—PRE-SHAKESPEAREAN DRAMA. An historical course in English dramatic origins.

(5) III (Farquhar)

110a—SHAKESPEARE—COMEDY. Shakespeare's comedies will be studied in detail.

(5) I (Farquhar)

110b—SHAKESPEARE—TRAGEDY. A continuation of 110a, which is not prerequisite, although desirable.

(5) II (Farquhar)

111—THE VICTORIAN NOVEL IN ENGLAND. A study of the Victorian novel to and including Thomas Hardy. Eleven novels are read.

(5) (Knight)

116—THE CONTEMPORARY DRAMA. Development and tendencies in Continental, British, and American dramatic literature, 1850 to 1918.

(5) III (Farquhar)

123a—AMERICAN LITERATURE BEFORE 1830. A survey intended to show the development of American life, thought, and letters up to the Transcendental movement. Emphasis upon Edwards, Paine, Franklin, Irving, Cooper, Bryant.

(5) I (Knight)

123b—AMERICAN LITERATURE AFTER 1830. A continuation of 123a, which is not prerequisite. Beginning with the Transcendentalists, it studies the triumphant years of American romanticism, with especial attention to Emerson, Thoreau, Hawthorne, Melville, Poe, and Whitman.

(5) II (Knight)

124—THE RENAISSANCE. A survey of the literature of the Elizabethan period exclusive of the drama. Foreign sources of the English Renaissance. The sonnet from its origin to its development in Spenser. The pastoral from Theocritus to Spenser. Utopian literature from Plato to More.

(5) I

125—PRONUNCIATION OF MODERN ENGLISH. A study of present day pronunciation; dialectical peculiarities. Students will become proficient in using a phonetic alphabet.

(5) III

127a—LITERATURE OF THE BIBLE. A literary study of the Bible by Books. It develops an appreciation of literature generally because of the demand that literature identify itself with the highest thought and feeling.

(5) II (Farquhar)

127b—LITERATURE OF THE BIBLE. This is a continuation of 127a.

(5) III (Farquhar)

130a—COMPARATIVE LITERATURE. Extensive reading of literary masterpieces through the ages from Homer to the present day. A study of the great traditions of civilization as reflected in the literary monuments. Lectures, assigned readings, and class discussion. Intended for advanced undergraduates or graduate students. The reading is assigned entirely in translations, but a reading knowledge of at least one foreign language is highly desirable.

(5) II (Brady)

130b—COMPARATIVE LITERATURE. A continuation of 130a.

(5) III (Brady)

131a-d—INDEPENDENT WORK. A course for juniors and seniors of exceptional scholastic standing. Each student pursues a course independently. He writes a paper embodying results of this study and submits to an examination by the staff of the Department.

(3) I, II, III, IV (Staff)

133—THE DEVELOPMENT OF AMERICAN REALISM. Traces the progress of American realism from Yankee and pioneer humorists through the local color school, the leading novelists of the eighties and nineties, their contemporaries in drama and poetry, to the writers of today. Especial attention is given to the social and economic conditions which motivated this literature.

(5) III (Knight)

143—EDGAR ALLAN POE. A comprehensive study of Poe's works, poetry and prose. Primarily for the summer session.

(5) IV (Farquhar)

147—AGE OF JOHNSON. From the death of Poe to 1798. Johnson and his circle: Burke, Goldsmith, Gray, Walpole, Cowper. The pre-romantic movement.

(5) I (Cooke)

152—AGE OF POPE. Addison and Steele, Swift, Pope, and Defoe.

(5) III (Cooke)

153—RESTORATION AND THE DRAMA OF THE EIGHTEENTH CENTURY.

(5) III

155a—CONTEMPORARY AMERICAN POETRY. An examination of the forces which developed to create modern poetry in England and America since 1900. The course to be historical of the movements and currents in their origins and ideas and to be literary and aesthetic in an appreciation of form, matter and style. Collateral reading.

(5) I (Farquhar)

155b—CONTEMPORARY BRITISH POETRY. A continuation of 155a.

(5) II (Farquhar)

160—THEORY AND TECHNIQUE OF ACTING. Theory of acting applied to individual problems and groups. Development of skill, effectiveness, and grace in the use of the body. Attention on establishing mood, reactions between characters, suspense, three voice modulations, pause, and other modes of emphasis, sustaining tone and emotion, projecting voice and characterization, procuring audience response, timing, and analysis of characterization. This course is designed to be helpful to public speakers, actors, teachers, and to those who wish to overcome self-consciousness and awkwardness and to develop grace of movement, and coordination of mind and body.

(4) I (Fowler)

161—THEORY AND TECHNIQUE OF THEATRE DIRECTING. Practice in directing, theory of plotting and interpreting a play for directors. Study of movement, interpretation of lines, creation of atmosphere, use of stage areas, arrangement of furniture for actors, picturization, balance, use of levels, methods of achieving a climax, handling of groups, planning of mob scenes. Attention to the psychology of actors, and audience reaction. Each student will have opportunities to direct plays under supervision. This course is designed for future workers in all types of theatres, especially for teachers who will have to direct plays as part of their regular work

(4) II (Fowler)

162—THEORY AND TECHNIQUE OF THEATRE PRODUCING. Intensive study of the practical problems of play production. Application of modern aesthetic principles and theories to the theatre. Practice and demonstration of non-professional theatre producing. Attention to coordination of the playwright, designer, technical director, electrician, stage manager, and the actor; editing

scripts, casting, rehearsal methods, directing techniques, the performance, dramatic criticism, management of "front of the house" including advertising, publicity, business management.

(4) III (Fowler)

163a—PLAYWRITING. This course is designed as a practical course in the writing of plays for production. A study of the principles of dramatic composition. Members of the class will write one act plays first quarter and present them as laboratory exercises on the Guignol stage.

(5) I (Fowler)

163b—PLAYWRITING. A continuation of 163a. Principles of dramatic composition will be continued; full length plays will be written and produced.

(5) II (Fowler)

172—WRITING THE ONE-ACT PLAY. A course in the composition of original one-act play, stressing the uses of native materials, the traditions and present-life of the region with which the student is familiar. Attention on construction, technique, and dramatic composition of the well-made one-act play. Two acceptable one-act plays will be required of each student and students will have the opportunity to see the best play in the class produced by an acting group on the Guignol stage.

(5) I (Fowler)

174—WRITING THE FULL-LENGTH PLAY. A study of dramatic composition, construction, writing techniques as applied to the long play and the experimental play. Attention on writing for the educational theatre, the professional theatre, the moving pictures, and living newspaper. Production of the best plays in the class will be given on the Guignol stage. Only those students who have done outstanding work in the one-act writing course will be invited to enter this course. New students are accepted on the basis of original work submitted prior to registration.

(5) III (Fowler)

The following courses will be offered as may be requested by students pursuing studies leading to advanced degrees.

201a—LITERARY CRITICISM. The course is mainly an application of the philosophic and historical elements of literary criticism to some period of literature or to the works of some author in a period. It is criticism that essays the unity of all literature, its everlasting growth and the importance of inductive observation of literary phenomena.

(5) I (Farquhar)

201b—LITERARY CRITICISM. A continuation of 201a. Special problems assigned to students.

(5) II (Farquhar)

202a—STUDIES IN CONTEMPORARY DRAMA. This course is an application of the philosophy and history of drama to the modern drama as a whole and to the work of some particular dramatists. It includes a particular study of the work of Ibsen as prerequisite to any other study.

(5) I (Farquhar)

202b—STUDIES IN CONTEMPORARY DRAMA. A continuation of 202a. Special problems assigned to students.

(5) II (Farquhar)

206a, b—SEMINAR LITERATURE OF THE ENGLISH ROMANTICAL PERIOD. Special studies in Literary critical theory; studies in principal writers and in currents of the Age of Wordsworth.

(5) III, IV (Ward)

210—SEMINAR. BIBLIOGRAPHICAL STUDIES. Required of all candidates for the M. A. degree.

(5) I (Brady)

212a-d—SEMINAR. STUDIES IN PHILOLOGY. Studies in Old English poetry and prose—Cynewulf, Beowulf; Alfred and his circle; Middle English—Chaucer.

(5)

213a-d—SEMINAR. STUDIES IN EIGHTEENTH CENTURY LITERATURE. Johnson and his circle, Swift, the Romantic Revolt, or the foreign relations of English literature in the eighteenth century or the theory and practice of Neo-Classicism will be chosen for extensive investigation according to the needs of the students in the group.

(5) (Cooke)

214a-d—SEMINAR. VICTORIAN LITERATURE. Intensive studies in the social and literary significance of Arnold, Browning, Carlyle, and Ruskin.

(5) (Brady)

215a-d—SEMINAR. CULTURAL STUDIES. 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.

(5) (Farquhar)

216a-d—SEMINAR. THE CRITICAL PERIOD IN AMERICAN LITERATURE: 1890-1900. A study of the literature of the nineties, with emphasis upon the battle over realism, the loss of early national optimism, the resistance to naturalism, and the development of a genuine American literature. Special attention is given to the

aesthetic and social problems found in the works of Garland, Henry James, Howells, and Stephen Crane; lesser writers and the magazines of the period are also investigated. One long research paper and one or more short ones are required.

(5) (Knight)

217a-d—SEMINAR. STUDIES IN CONTEMPORARY AMERICAN LITERATURE. A seminar in American literature from 1914 to the present. A preliminary survey of the trends of contemporary American literature is followed by research based upon the work of one writer or one school of writers of the 1930's. One long paper and one or more short ones are required.

(5) (Knight)

GERMAN

The Department of German requires as a prerequisite for the Masters Degree, attainment in German equivalent to that required of 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 quarter when requested by a sufficient number of students.

101a—NINETEENTH CENTURY LITERATURE. Study of representative dramas of the 19th Century from the late dramas of Schiller up to 1870.

Prerequisite: 6 quarters of German.

(3) I Whitaker

101b—NINETEENTH CENTURY LITERATURE. Growth and development of the German Novelle.

Prerequisite: 6 quarters of German.

(3) II Whitaker

101c—NINETEENTH CENTURY LITERATURE. Continuation of 101b.

Prerequisite: 6 quarters of German.

(3) III Whitaker

102a—TWENTIETH CENTURY LITERATURE. A study of the trend in German Literature of the twentieth century. Gerhart Hauptmann will be studied in greater detail than his contemporaries. Readings, reports, and term paper.

Prerequisite: 6 quarters of German.

(3) I Bigge

102b—TWENTIETH CENTURY LITERATURE. Continuation of 102a.

Prerequisite: 6 quarters of German.

(3) II Whitaker

102c—TWENTIETH CENTURY LITERATURE. Continuation of 102b.

Prerequisite: 6 quarters of German.

(3) III Bigge

103a—LIFE AND WORKS OF GOETHE. This course follows the unfolding of Goethe's genius from his first lyrics through the second part of Faust. His principal literary works will be read and special attention devoted to autobiographical material, letters, and diaries.

Prerequisite: 6 quarters of German. (3) I Hegeman

103b—LIFE AND WORKS OF GOETHE. Continuation of 103a.
Prerequisite: 6 quarters of German. (3) Hegeman

103c—LIFE AND WORKS OF GOETHE. Continuation of 103b.
Prerequisite: 6 quarters of German. (3) Hegeman

105a-f—INDEPENDENT WORK IN GERMAN. This course is designed for students who wish to do advanced work on any topic in the field of German. It is not limited to majors in the Department.
Prerequisite: 6 quarters of German. (4 ea.) I, II, III Staff

106a—ADVANCED SCIENTIFIC GERMAN. This course is designed primarily for students of the physical and biological sciences. Reading is done in recent German Scientific Journals and Books, the material being selected in line with the students special interest.
Prerequisite: German 20b or 21b, (3) I Whitaker
or permission of the Department.

106b—ADVANCED SCIENTIFIC GERMAN. Continuation of German 106a.
Prerequisite: German 20b or 21b, (3) II Whitaker
or permission of the Department.

106c—ADVANCED SCIENTIFIC GERMAN. Continuation of German 106b.
Prerequisite: German 20b or 21b, (3) III Whitaker
or permission of the Department.

111—PROSEMINAR IN GOETHE. Study of selected works of Goethe showing his development from the "Sturm und Drang" to the German Classical Period, with written reports on various aspects of his life and works.

Prerequisite: 6 quarters of German. (3) I Hegeman

112—PROSEMINAR IN KLEIST—Study of the dramatic works of Heinrich von Kleist with written reports on various subjects relating to his life and works.

Prerequisite: 6 quarters of German. (3) Whitaker

113—PROSEMINAR IN HAUPTMANN. Study of selected works of Gerhart Hauptmann as they reflect his personal philosophy and the literary currents of the period. This course will include written reports on various topics related to the author and his period.

Prerequisite: 6 quarters of German. (3) Bigge

150—ORIGIN AND DEVELOPMENT OF THE GERMAN LANGUAGE. This introductory course in Germanic Philology acquaints the student with the position of German in the Indo-European language group and 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 quarters of German.

(4) I Whitaker

151—ELEMENTARY 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 quarters of German.

(4) II Hegeman

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

Prerequisite: 6 quarters of German.

(4) III Ubben

203a—GERMAN LITERATURE FROM LUTHER TO LESSING. This course traces the principal trends in German life and thought from the Protestant Reformation through the Age of Enlightenment as they are reflected in the work of the chief authors.

Prerequisite: 6 quarters of German.

(3) I Bigge

203b—GERMAN LITERATURE FROM LUTHER TO LESSING. Continuation of German 203a.

Prerequisite: 6 quarters of German.

(3) II Bigge

203c—GERMAN LITERATURE FROM LUTHER TO LESSING. Continuation of German 203b.

Prerequisite: 6 quarters of German.

(3) III Bigge

JOURNALISM

Note.—Prerequisites for journalism majors for the following courses include Journalism 2, 21, and 22.

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

(3) I, II, III (Plummer)

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

Prerequisite: Journalism 100a.

(3) II, III, IV (Portmann)

JOURNALISM 101a—COPYREADING. Instruction and practice in newspaper deskwork. Preparation of local, state, telegraph, and radio news and features. Lecture, 1 hour; laboratory, 4 hours.
(3) II (Tucker)

JOURNALISM 101b—EDITING. A continuation of Journalism 101a with emphasis on press association copy, picture editing, and page make-up. Lecture, 1 hour; laboratory, 4 hours.
Prerequisite: Journalism 101a.
(3) III (Tucker)

102—COMMUNITY JOURNALISM. A study of the problems which confront the community weekly and the small city daily.
(4) I, IV (Portmann)

103—NEWSPAPER ADMINISTRATION. A study of the business circulation, advertising, and accounting divisions of the newspaper with special emphasis on the community newspaper.
(4) II, IV (Portmann)

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

106—INFLUENCE OF THE NEWSPAPER. A course devoted to the examination of criticisms of the modern press and an evaluation of the influence of the press in the twentieth century. Lectures and readings directed toward the evolution of principles for the guidance of members of the news, editorial, and business staffs of newspapers.
(4) II (Plummer)

107—EDITORIAL WRITING. A study of editorials, editorial columns, and editorial pages. Publication is encouraged.
(3) III (Tucker)

108—HISTORY OF JOURNALISM. A study of the rise and development of American journalism and newspapers.
(4) I (Portmann)

JOURNALISM 109a—TYPOGRAPHY. Instruction and practice in typographic composition. Use of type faces in news editing. Laboratory, 4 hours.
(2) II (Portmann)

JOURNALISM 109b—TYPOGRAPHY. A continuation of Journalism 109a with emphasis on typography in the make-up of American newspapers. Laboratory, 4 hours.
Prerequisite: Journalism 109a.
(2) III (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.

(4) III, IV (Portmann)

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

(4) I, III, IV (Tucker)

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

(4) I, II, III, IV (McLaughlin)

JOURNALISM 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.

(4) I, III (Portmann)

115—ADVERTISING TYPOGRAPHY AND LAYOUT. A study of the principles of typographic families and illustrations and decorations that pertain to modern advertising. Practical work with merchants is included in the latter part of the course.

(4) I, III, IV (Portmann)

118—PUBLICITY. Lectures and practice dealing with the aims and methods of writing news and special articles on the work of schools, colleges, libraries, and social service agencies.

(4) III, IV (Plummer)

120—SEMINAR IN PUBLIC OPINION. A detailed examination of techniques developed and used by the press in influencing public opinion. Specific cases studied. Latter part of the course devoted to the preparation of newspaper campaigns with current problems of society.

(4) III (Plummer)

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

(3) II (Tucker)

123b—FEATURE WRITING. A continuation of Journalism 123a with emphasis on writing, illustrating, and marketing features for newspaper supplements, trade journals, and other periodicals.

(3) III (Tucker)

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

(4) IV (Plummer)

127—REPORTING PUBLIC AFFAIRS. Instruction and practice in reporting the news originating in courts and other public institutions and the news of politics, finance, and labor.

(3) III (Plummer)

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

(3) III (Tucker)

LIBRARY SCIENCE

COURSES RECOMMENDED FOR TEACHER-LIBRARIANS: High schools with enrollment of 300 or less, 18 quarter hours in courses 110, 127, 128, 129a, 133a, and 145. High schools with enrollments above 300: a full time librarian who has had the complete professional curriculum of 45 quarter hours.

PROFESSIONAL COURSES

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

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

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

110—THE LIBRARY IN THE SCHOOL. A study of the school library as a functioning organization. Topics included: School library objectives: planning and equipment, personnel problems, standards, budgets and finance, circulation records and procedures, attendance and other records, instruction in the use of the library, school library activities, library relations with faculty, students and administration, the school library and other community agencies.

(3) II (Wofford)

112—THE PUBLIC LIBRARY. A study of the public library as a functioning institution. Topics included: Organization and administration of public library service, selection of books for public libraries, registration and circulation records, analysis of public library services and activities, trends in public library service, the library in relation to other community organizations. The course will include case studies of specific libraries.

(3) II (Deily)

114—THE COLLEGE AND UNIVERSITY LIBRARY. A study of the college and university library as a functioning institution. Topics included: Higher education in America, functions of the library in higher education, library standards, organization and ad-

ministration of libraries in higher educational institutions, the library staff, finances, book collections, buildings, equipment, records and reports, circulation problems and procedures, analysis of library services and activities, trends in college and university library service, library relations with faculty, students, and administration. The course will include case studies of specific libraries.

(3) III, IV (Deily)

121—INTRODUCTION TO LIBRARY WORK. An orientation course designed to give students a general understanding of libraries and library work. Topics included: Survey of libraries in the United States, types of positions in libraries, training for library work, qualifications expected of the trained librarian, library work as a profession, functions of libraries, general principles of library administration. This course is open to prospective majors during their Junior year to give them an opportunity to test their interest in library science.

(3) I, IV (Wofford)

127—READING FOR YOUNG PEOPLE. This course will consider reading needs and interests of young people, together with library materials appropriate for each. Methods of reading guidance with various types of readers and employing all kinds of media will be considered. Important for the prospective school librarian and others planning library work with young people.

Prerequisites: L.S. 152a, 152b.

(3) III (Wofford)

128—CHILDREN'S LITERATURE. A survey of children's books with a comparative study of representative types from pre-school to junior high school age, illustrations and editions, book reviewing periodicals, aids in the selection of children's books and magazines. Closely correlated with L.S. 132.

(3) III, IV (Martin)

129a—CATALOGING AND CLASSIFICATION. A study of the principles and methods of classifying and cataloging books. Emphasis will be on the functions of cataloging and classification but with sufficient practice work to enable students to handle cataloging problems in a library situation.

(4) I, IV (Wofford)

129b—CATALOGING AND CLASSIFICATION. A continuation of L.S. 129a.

(4) II, IV (Wofford)

132—LIBRARY WORK WITH CHILDREN. A study of the origin and present status of library work with children in school and public libraries. Units of the course include story-telling and other methods of developing the child's appreciation of literature, ad-

ministration of library work with children, and elementary school library service.

Prerequisite: L.S. 128.

(3) III, IV (Martin)

133a—REFERENCE AND BIBLIOGRAPHY. A study of the essential reference works, including dictionaries, encyclopedias, atlases, yearbooks and periodical indexes; of the more important subject and trade bibliographies; vertical file materials; and of the standards and methods by which such material is selected, organized, and efficiently used. Special attention is paid to the reference book collection in the high school library.

(4) I (Deily)

133b—REFERENCE AND BIBLIOGRAPHY. A continuation of L.S. 133a. Emphasis is placed on reference books in subject fields and on the national and subject bibliographies.

Prerequisite: L.S. 133a.

(3) II (Deily)

139—FIELD WORK. Comparable to practice teaching. Observation of service in libraries in the area, and supervised practical work in all departments of the libraries of the University School and nearby school systems. The course is supplemented by class-room discussions. Six hours per week.

Prerequisites: L.S. 121, 129a, (3) III, IV (Roser and Staff)

129b, 133a, 145, 152a and 152b.

145—ORGANIZATION OF LIBRARY MATERIALS. A course designed to give the beginning librarian practical instruction in the acquisition and organization of library materials. Among the topics included are ordering, accessioning, preparation of books and other materials for library use, mending, binding procedures, inventory, and the other processes concerned with the physical maintenance of the collection. The use of library statistics in making reports is investigated.

(2) II, IV (Wofford)

152a—BOOK SELECTION. A general study of book selection principles and methods, with emphasis on printed materials as they interpret modern problems. Topics and activities included: Principles and standards for the selection of books, periodicals and pamphlets, book publishing, series and editions, extensive reading and evaluation of types of books in philosophy, religion, sociology, science, the fine arts, history and travel, critical examination of aids to book selection, including book reviewing periodicals.

(4) I, IV (Martin)

152b—BOOK SELECTION. A continuation of L.S. 152a, with intensive reading and evaluation of books in biography, fiction, poetry, drama and essays. Practice in the selection of books for vary-

ing types of library situations, in oral and written reviews, characteristics of adult readers and their needs.

(3) II, IV (Martin)

154—SEMINAR IN PROBLEMS OF LIBRARIANSHIP. The investigation and discussion of recent developments in librarianship as reported in the current literature, the use of the library survey as an instrument of analysis is explored, the influences of current economic, social, and educational problems upon library development.

Prerequisites: L.S. 121, 129a, 129b, 133a, (3) III, IV (Deily)
145, 152a, and 152b.

ROMANCE LANGUAGES AND LITERATURES

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—ADVANCED PHONETICS. A study of the phonetics of Romance Languages with special attention to French. A course to prepare teachers of phonetics.

(4) I, II (Schick)

103b—ADVANCED PHONETICS. Continuation of 103a.

(4) II or III (Schick)

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

(3) I, II, III, IV (Ryland)

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

(3) I, II, III, IV (Ryland)

109c—FRENCH LITERATURE OF THE NINETEENTH CENTURY. Continuation of 109b.

(3) I, II, III, IV (Ryland)

110a—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. A study of the literature of this period except for Moliere, Corneille and Racine.

(3) I, II, III, IV (Horsfield)

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

(3) I, II, III, IV (Horsfield)

110c—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Continuation of 110b.

(3) I, II, III, IV (Horsfield)

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

(4) I or II (Ryland)

113b—ADVANCED FRENCH GRAMMAR. Continuation of 113a.

(4) II or III (Ryland)

114a-b—INDEPENDENT WORK IN ROMANCE LANGUAGES. Independent work designed to meet individual needs of students after consultation with the staff.

(3) I, II, III, IV (Staff)

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

(3) I, II, III, IV (Schick)

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

(3) I, II, III, IV (Niess)

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

(4) I or II (Ryland)

201b—FRENCH LITERATURE OF THE FRENCH RENAISSANCE. Continuation of 201a.

(4) II or III (Ryland)

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

(4) I or II (Schick)

202b—OLD FRENCH. Continuation of 202a.

(4) II or III (Schick)

204a—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.

(4) I or II (Schick)

204b—ROMANCE PHILOLOGY. Continuation of 204a.
(4) II or III (Shick)

205a, b, c, d—SEMINAR IN FRENCH LITERATURE.
(4) I, II, III, IV (Staff)

SPANISH

102a, b—ADVANCED SPANISH GRAMMAR AND COMPOSITION. A study of the grammar and syntax of the Spanish language.
(4) I, II, III, IV (Server)

104a, b, c—SPANISH LITERATURE OF THE SEVENTEENTH CENTURY. A study of the novel, drama, poetry of the Golden Age. Lectures and reading.
(3) I, II, III, IV (Server)

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

108a, b, c—SPANISH AMERICAN LITERATURE. A study of the representative literature of the South American and Central American countries.
(3) I, II, III, IV (Server)

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

112b—SPANISH LITERATURE OF THE NINETEENTH CENTURY. Latter half of century.
(3) I, II, III, IV (Server)

112c—SPANISH LITERATURE OF THE NINETEENTH CENTURY. Continuation of 112b.
(3) I, II, III, IV (Server)

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

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

206a, b, c, d—SEMINAR IN SPANISH LITERATURE.
(4) I, II, III, IV (Staff)

II. SOCIAL SCIENCES

ANTHROPOLOGY (See Biological Sciences.)

COMMERCE (See Economics and Commerce.)

COMMERCIAL EDUCATION (See Education.)

ECONOMICS AND COMMERCE

DEPARTMENTAL REQUIREMENTS FOR THE MASTER'S DEGREE IN ECONOMICS AND COMMERCE

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 quarter 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.

DEPARTMENTAL REQUIREMENTS FOR 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 the 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, 152, 153, 203, 208, 215, and 216, Farm Econ. 202a and b, 203.

Economic history: Economics 125, 134, 147, 148, 204, and 205.

Statistics: Economics 107, 142, 152, 210, Commerce 149, 150, Math. 120, 124, and Psy. 215.

Private finance: Economics 105, 209 and 211, Commerce 117, 129, 131, Mar. and R. F. 111.

Public finance: Economics 104, 124, 157, 158, 206a and b, 207a and b, Commerce 133, 159, Law 153, 161a and b, and Political Science 177a and b.

Industrial relations: Economics 102, 130, Commerce 155, Law 142, Sociology 226 and Psychology 106.

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

Accounting: Commerce 106a and b, 108, 113, 118, 129, 132a and b, 133 and 159.

Industrial management: Commerce 118, 137, 145, 155, and Psychology 106.

Marketing: Commerce 119, 135, 136, 140, 149, Economics 127, 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 quarter hours presented by the candidate for the degree not less than twenty-three quarter hours must represent courses and seminars numbered 200 and above. The final examination ordinarily will be confined to the candidate's thesis subject and its relation to his general course of study.

DESCRIPTION OF COURSES

ECONOMICS

102—LABOR PROBLEMS. Insecurity, wages and income, sub-standard workers, industrial conflict; wage theories, the economics of collective bargaining, unionism in its structural and functional aspects; recent developments.

Prerequisite: Course 1.

(4) I, IV (Carter)

103—TRANSPORTATION. Railways, waterways, highways, airways. Rates, service, management, regulation.

Prerequisite: Course 1.

(4) I, IV (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: Course 1.

(4) I, III, IV (Martin)

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: Course 1.

(4) II, III, IV (Carpenter)

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

(4) I (Carpenter 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.

Prerequisites: Course 1 and an elementary course in statistics.

(4) I, II, III, IV (Carpenter)

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

Prerequisite: Course 1.

(1) I, II, III, IV (Staff)

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

(4) 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.

Prerequisite: Course 1.

(4) II, IV (Martin)

125—EVOLUTION OF ECONOMIC INSTITUTIONS. The rise of economic institutions such as property rights, capital formation, contractual labor, *et cetera*, as influenced by the family, the city-state, nationalism, commerce, finance, the manor, the guilds, and the industrial revolution.

Prerequisite: Course 2 or
consent of instructor.

(4) II (Jennings)

126—ECONOMICS OF PUBLIC UTILITIES. No credit for this course can be given if the student has credit for Political Science 158. Growth and development of public utilities; valuation; rate-making; financing; the holding company; regulation; current problems; accounting.

Prerequisite: Course 1.

(4) I, IV (Carter)

127—INTERNATIONAL ECONOMIC POLICIES. Modern fallacies respecting foreign trade; free trade; protectionism; preferential tariffs; colonial tariff policies; dumping; commercial treaties; control of raw materials; encouragement of shipping; international investments and the movement of capital; international debts; reparations.

Prerequisite: Course 1.

(4) III (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: Course 1.

(4) III (Carter)

134—ADVANCED ECONOMIC HISTORY OF THE UNITED STATES. An advanced study of English colonial policy, population growth, immigration, territorial expansion, agriculture, manufactures, tariff, labor, industrial combinations, commerce, transportation facilities, money and banking, and conservation.

(4) II (Jennings)

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

a study of the construction and use of the common index numbers of prices and production.

Prerequisite: An elementary course in statistics.

(2) II (Massie)

147—AMERICAN 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: Course 3 or consent 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: Course 2 or consent of instructor.

(2) II (Jennings)

152—INCOME AND WEALTH. The definition of these concepts, the relations between them, their relations to economic theory, their measurement on a national, regional, local, corporate, and individual basis, with particular reference to Kentucky, and the causes of differences in income and wealth between different localities.

Prerequisites: Com. 1 and an elementary course in statistics.

(2) I

153—THE ECONOMICS OF CONSUMPTION. The place of consumption in economic theory with special emphasis upon its relation to the phases of the business cycle including the institutional background of our consumer habits; sources of information on consumption; and government regulation of consumer standards.

(3) II (Sullivan)

157—GOVERNMENT FINANCE ADMINISTRATION. Government budget, accounting, debt, purchasing, treasury, revenue, and auditing administration is examined; and illustrations are drawn from federal, state, and local experience. Each student makes a special report on finance-management study or experience.

(4) III (Martin)

158—ADMINISTRATIVE RESEARCH PROBLEMS. The place of a research program in an administrative agency, the coordination between research work and the agency's functional activities, the types of research and the place of each type in the program, the sources of data within and without the agency, tabulation and charting procedures, the simpler processes of analysis of statistical and other information but with a minimum of practice in statistical techniques.

(4) II

202a-f—SEMINAR. An extended original 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) I, II, III, IV (Wiest and others)

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: Course 1.

(5) I (Wiest)

204—ECONOMIC HISTORY OF THE UNITED STATES PRIOR TO 1860. An examination of original sources and class reports; intensive investigation of all the subjects in detail prior to 1860.

Not open to students who have

(3) I (Jennings)

taken Course 134 for graduate credit.

205—ECONOMIC HISTORY OF THE UNITED STATES SINCE 1860. A continuation of Course 204, but may be taken independently.

Not open to students who

(3) II (Jennings)

have taken Course 134 for graduate credit.

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—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) II (Martin)

207b—PROBLEMS IN PUBLIC FINANCE. Continuation of 207a.

(2) III (Martin)

208—ADVANCED ECONOMIC THEORY. A critical examination of current literature on economic problems and policies.

Prerequisite: Course 1.

(4) III (Sullivan)

209—COMPARATIVE BANKING AND MONETARY SYSTEMS. A comparative study of banking systems and monetary policies in the principal countries of the world; emphasis is placed upon present-day organization; the commercial bank with its monetary functions is the main theme of the course, but brief surveys of investment banking systems are also attempted.

(4) 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 statistical meaning of economic concepts and the testing of economic theory.

Prerequisites: An elementary course in statistics and consent of instructor.

(2) I (Carpenter)

211—ADVANCED MONEY AND BANKING. A general survey of the subject is attempted with the emphasis upon its historical and theoretical aspects.

(4) III (Carpenter)

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

(1) I, II, III, IV (Staff)

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

(4) II (Wiest)

216—BUSINESS CYCLE THEORY. An advanced course including a reading of important theories and studies of the business cycle.

Prerequisite: Com. 110

(2) III (Carpenter)

COMMERCE

101—SECRETARIAL OFFICE PRACTICE. This course is designed to provide laboratory and office experience for senior secretarial students. A minimum of 48 hours of office experience under supervision is required.

Prerequisites: Courses 14a and 14b.

(2) III

106a—INTERMEDIATE ACCOUNTING. Principles of financial statement, arrangement and content. Corporation accounting. Accounting for consignment and installment sales.

Prerequisites: Courses 7a and 7b. (4) II, IV (Haun and Beals)

106b—INTERMEDIATE ACCOUNTING. Accounting for partnerships, ventures, agencies and branches. Accounting features of insolvent concerns and of consolidations and mergers. Estate accounting.

Prerequisites: Courses 7a and 7b

(4) III, IV (Haun and Beals)

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: Course 106b.

(3) I (Beals)

109a—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.

(4) I, II, IV (Haun)

109b—BUSINESS LAW. Continuation of 109a.

(4) II, III, IV (Haun)

111—ADVANCED SALESMANSHIP. This course is designed primarily for high school and college teachers who are required to give such work in their respective schools. Extensive reading; preparation and presentation of sales demonstrations; critical analysis of modern sales techniques and coordination of selling with the related fields of advertising, merchandising, credit management and market research will be considered.

Prerequisite: Course 11 or consent of instructor

(4) IV (McIntyre)

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.

Prerequisites: Courses 7a and 7b. (4) III, IV (Haun and Beals)

117—CORPORATION FINANCE. Stocks and bonds, sound fiscal 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 1, 7a, 7b. (4) I, II, III, IV (Carpenter)

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

Prerequisites: Courses 7a, 7b. (4) I, IV (Haun and 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.

Prerequisites: Courses 1, 10. (4) II, IV (McIntyre and DeVoe)

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

Prerequisite: Course 7a.

(3) I (Haun and Beals)

131—INVESTMENTS. The general field of investments. Emphasis is placed upon problems which face the investor rather than the seller of securities. Analysis of corporation statements for investment purposes; the security market; market influences on security prices; effect of interest changes on security prices;

analysis of specific types of investments; and the development of investment programs.

Prerequisites: Courses 105 and 117.

(4) II (Pickett)

132a—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: Courses 106a
and 106b.*

(3) II (Haun and Beals)

132b—C. P. A. PROBLEMS. Continuation of 132a.

(3) III (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: Courses 106a, 106b.

(4) II (Haun and Beals)

135—ADVANCED MARKETING. The literature and problems in the retail distribution of consumers' goods; wholesale distribution of consumers' goods; industrial goods; sales organization; sales promotion and advertising and price policies.

Prerequisite: Course 10.

(3) II (DeVoe)

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

*Prerequisite: Course 11 or the
consent of the instructor.*

(3) I (McIntyre)

137—PROBLEMS IN MANAGEMENT. Emphasis is placed upon factory management, but an attempt is made to coordinate managerial aspects of business in its entirety. Approximately half of the quarter is devoted to the consideration and criticism of business reports dealing with various managerial problems and prepared by members of the class.

*Open only to seniors of the College
of Commerce, and to graduate
students who have had the
necessary prerequisite training.*

(4) II, III (Carter)

138—INVESTIGATION OF BUSINESS PROBLEMS. The method of surveying, analyzing and actual investigation of problems of business management. It is intended for mature students who have had a thorough training in commerce and who are capable of doing research work under the guidance of the instructor. The work involves the statistical analysis of data secured through interviews, questionnaires and otherwise, and the use of the results in determining a satisfactory solution.

*Open only to seniors of the College
of Commerce, and to graduate
students who have had the
necessary prerequisite training.*

(4) III (Pickett)

140—ADVERTISING CAMPAIGNS. The procedure necessary for developing an advertising campaign; a study of successful advertising campaigns as used by leading business houses throughout the country; and the planning and execution of an advertising campaign in conjunction with some local business house. The advertising campaign worked out by the student will be checked and tested for its effectiveness.

Prerequisite: Course 20, (3) I (McIntyre)
or the consent of the instructor.

143—LIFE INSURANCE. Economics of life insurance; organization and control; special forms of life insurance; fundamental principles of rate-making.

Prerequisite: Course 1. (4) I, IV (Carpenter)

144—PROPERTY AND CASUALTY INSURANCE. Public control; nature of contracts; analysis of reserve functions and rate-making processes.

Prerequisite: Course 1. (4) II (Carpenter)

145—OFFICE MANAGEMENT. Planning and scheduling of work; employment procedures; supervision of employees, re-training, promotion; equipment. (4) III, IV

149—MARKET ANALYSIS. Training in the application of scientific method to research in fields of marketing. A major marketing investigation will be conducted by the class.

Prerequisites: Com. 10 and a (4) III (DeVoe)
course in statistics.

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, indicating the importance of each type; and training in the application of statistical and other techniques to business data.

Prerequisite: An (3) I, II, III, IV (Carpenter and Massie)
elementary course
in statistics.

151—SECRETARIAL STATISTICS. The rules of accuracy in computation, tabulation of data, graphing of business data, organization charts, statistical maps, the operation of calculators and other machines used in statistical work, the sources of statistical material of interest to business.

Prerequisites: Com. 17a, Secretarial (4) II (Carpenter and Massie)
Practice, Typewriting

154—URBAN REAL ESTATE. Urban land economics; the growth and planning of urban communities; survey of the real estate

(4) III, IV

business and institutions; essentials of real estate law and contracts; the financing of real estate transactions; the problem of property valuation and appraisal; the management of real estate properties; the problem of ownership versus rental; the problem of real estate securities as investments; governmental activities.
Prerequisite: Course 117. (4) III (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, established policies, practices and procedures under the law; union-management cooperation, building morale; the public service. (4) III (Carter)

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. (3) II, III

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.

Prerequisites: Course 7a and 7b. (3) III (Beals)

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, twenty-four quarter 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.

A creditable thesis is required in all cases, giving evidence of ability to investigate a specific topic, with a critical bibliography. The examination will include courses, thesis, and general knowledge of related material.

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 made formal application to be so enrolled.

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 present one division in each of the four major fields of history. He must select two divisions from his field of concentration.

FIELD I, EUROPEAN HISTORY

1. The Ancient World
2. The Middle Ages
3. Modern Europe

FIELD II, ENGLISH HISTORY

1. British History through the Restoration
2. British History since the Restoration

FIELD III, AMERICAN HISTORY

1. American History through 1865
2. American History since 1865

FIELD IV, THE FAR AND NEAR EAST, AND LATIN AMERICA

1. The Far East
2. The Near East
3. Latin America

FIELD V, MINOR FIELDS

The extent and content of his work in his minor department will be determined by the candidate's advisory committee.

The following courses are offered by the Department:

I. AMERICAN HISTORY

100a—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 and their historical evolution in practice.

Prerequisite: Course 5a (4) II (Vandenbosch and Hopkins) or equivalent.

100b—THE DIPLOMACY AND FOREIGN POLICY OF THE UNITED STATES SINCE 1898. A continuation of Course 100a. *Prerequisite: Course 5b or equivalent.* (4) III (Vandenbosch)

105—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 with the Dutch, French and Spanish. Emphasis on imperial policies and imperial control and the colonial controversies. *Prerequisite: One year of American or European History.* (4) II

106a—COLONIAL LATIN AMERICA. A survey of the founding and development of the Latin American Colonies and their struggle for independence. (3) II

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) III

140a-d—INDEPENDENT WORK. Under special conditions selected students may investigate special problems, with weekly reports to the instructor. (3) (Staff)

141—TUTORIAL READING. (1) (Staff)

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.* (4) I (Clark)

151a—THE AMERICAN FRONTIER. A course dealing specifically with American expansion westward from the original colonies. This course will consider the westward movement in respect to population, political, economic, social and cultural development; analyze the process of national adjustments; and weigh the contributions of each succeeding period. It will consider the early west. *Prerequisites: History 5a and 5b or equivalents* (4) I (Clark)

151b—THE AMERICAN FRONTIER. A continuation of Course 151a. It will consider the Trans-Mississippi West. *Prerequisites as for 151a.* (4) II (Clark)

161a—AMERICAN POLITICAL HISTORY TO 1860. An advanced course in the political history of the United States from the Revolution to the Civil War, in which emphasis will be placed upon

campaigns, issues, political leadership, and changing aspects of political institutions.

Prerequisite: Hist. 5a or equivalent.

(4) I (Eaton)

161b—AMERICAN POLITICAL HISTORY FROM 1860 TO THE PRESENT. This course will deal with the political history of the nation during the post-Civil War generation and the twentieth century. It will take into consideration the effects of Civil War and Reconstruction, the industrial revolution, agrarian unrest, and the various reform movements of this century. Attention will be given to the broad general movements and forces which have gone into the process of making political thought and action important factors in national history.

Prerequisite: History 5b or equivalent.

(4) II (Eaton)

180a—HISTORY OF THE OLD SOUTH. A study of the colonial beginnings and expansion of southern life, economics, and society. The growth of slavery, staple agriculture, and sectional politics will constitute the major interest. The course will consider the various points of sectional development which led to the break up of the Union. The South will be interpreted in both its relationship and contrast to national development.

Prerequisite: History 5a or equivalent.

(4) I (Eaton)

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.

(4) II (Eaton)

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.

(4) III (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 during the 12th and 13th centuries; the rise of Parliament; the Tudor strong monarchy to its close in 1603.

(4) I (Staff)

131b—ENGLISH CONSTITUTIONAL HISTORY SINCE 1603. A continuation of Course 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.

(4) II (Staff)

135a—THE BRITISH EMPIRE TO 1860. Review of the various elements affecting Great Britain and its Empire between 1783 and 1860; the Industrial Revolution; the French Revolution; development of British Sea Power. The early growth and development of Canada, Australia, New Zealand, South Africa and India. Lectures, class discussions, readings, reports.

(4) I (Staff)

135b—THE BRITISH EMPIRE SINCE 1860. A continuation of 135a. Great Britain and the growth of the Dominions and the Commonwealth since 1860. Particular attention given to the history of the Dominion of Canada and extension of the idea to other portions of the Commonwealth; their relations with the rest of the world.

(4) II (Staff)

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) III (Staff)

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.

(4) I (Staff)

III EUROPEAN HISTORY

114—THE RENAISSANCE AND REFORMATION. The course is designed for a study of the birth of modern spirit and institutions. Among the topics studied will be the rise of universities and professions, the expansion of commerce and finance, exploration, the interest in culture and art, the break-up of the Mediaeval Church, the Wars of Religion of the Sixteenth Century, the birth of National States, and the movement toward royal absolutism.

Prerequisite: History 8a or 4a.

(4) (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. Conditions in France and adjoining nations, the evolution of France from 1778 to 1795 and subsequent changes under Napoleon. Open to juniors, seniors and graduate students, with supplementary reading for the latter.

(4) III (McCloy)

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

1830, 1848 and 1871, together with the outstanding commercial, cultural and scientific features of European life after 1815; the expansion of Europe in Africa and Asia, and the reactions upon the great states of the world.

(4) II (Lunde)

120—THE TWENTIETH CENTURY. A study of recent and contemporary movements, chiefly in Europe. The rise and conflict of the chief colonial empires; European interference and control in Asia and Africa; forces and elements leading up to the great war; general features of the past twenty-five years, including socialism, public education, invention and discoveries. Reports on current literature and assigned reading on a liberal scale.

(4) III (Carson)

145—RUSSIA SINCE 1900. The purpose of this course is to trace the development of Russia, through the revolutionary upheavals of the present century, from a partly feudal and almost wholly agricultural country under the tsarist regime of the nineteenth century to a proletarian and industrial state under the Soviet Regime. Special attention is given a study of the methods, aims and achievements of the Bolshevik leaders and the Communist Party; an analysis of the nature of society in the world's principal socialist state; and economic, political and diplomatic factors which have made Russia a leading world power.

(4) I (Carson)

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; the social and intellectual influences of the enlightenment.

Prerequisite: Hist. 4a or its equivalent.

(3) II (Lunde)

175—THE DANUBIAN STATES. A study of the post-war politics and culture of Middle Europe and the Near East.

Prerequisite: Hist. 4b.

(3) (Carson)

176—THE THIRD FRENCH REPUBLIC. A study of the parties, politics, administration, diplomacy, economy, social movements, and general culture of France from 1870 to the present. A reading knowledge of French will be helpful to graduate students. Lectures, readings, reports, and discussions.

Prerequisites: Hist. 4a, b.

(3) IV (Carson)

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. (4)

206—THE CONFEDERATION OF THE U. S. (4) (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)

281—AMERICAN HISTORIOGRAPHY.
(3) I (Clark and Eaton)

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.
(4) (Vandenbosch)

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

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)

366—RECONSTRUCTION. (3) (Eaton)

European Group

320a-d—ORIGINS OF THE GREAT WAR. Seminar.
(4) (Carson)

331—SEMINAR IN MODERN BRITISH HISTORY
(4) (Staff)

350a, b, c, d—SEMINAR IN THE FRENCH REVOLUTION
(4) (McCloy)

HISTORY OF EDUCATION (See Education.)

MARKETS AND RURAL FINANCE (See Agriculture.)

LAW (See Law.)

PHILOSOPHY

101a—HISTORY OF PHILOSOPHY. A critical survey of Greek Philosophy and the Philosophy of the Middle Ages.

(4) (De Boer)

101b—HISTORY OF PHILOSOPHY. A critical survey of modern Philosophy from the Renaissance to contemporary times.

(4) (Kuiper)

102—CONTEMPORARY PHILOSOPHY. A study of contemporary philosophical tendencies against their historical background, notably idealism, pragmatism, realism, and naturalism. Writings of their American spokesmen (Royce, James, Dewey, Santayana, Whitehead) are closely studied, while correspondences with Europeans (Russell, Bergson, etc.) are noted.

(4) (De Boer)

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.

(4) (Kuiper)

109a-d—INDEPENDENT WORK. Open only to students who have distinguished themselves in Philosophy or in allied subjects.

(4) I, II, III, IV (Staff)

110—THE MAKING OF THE MODERN MIND. A survey of the intellectual and cultural background of the present age. This course considers the most revolutionary cultural, religious and scientific developments of the last three centuries and their effect upon the philosophic outlook of modern man.

(4) (Kuiper)

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.

(4) (Kuiper)

118—THE PHILOSOPHY OF PLATO. Plato against the background of his society with its contending cultural ideals: his philosophical development as mirrored in the chief dialogues, such as *Gorgias*, *Protagoras*, *Theaetetus*, *Sophist*, *Parmenides*, *Philebus*, *Timaeus*, portions of *Republic* and *Laws*, which reveal his achievements in cultural analysis, ethics, psychology, theory of knowledge,

metaphysics, and cosmology. Lectures, discussion, reading and outlines of selected passages.

(4) (De Boer)

119—THE PHILOSOPHY OF ARISTOTLE. Reading and discussion of passages in Aristotle's major systematic works: *Physics* (cosmology or natural philosophy); *Metaphysics* (investigation of the most general principles); *De Anima* (psychology and the analysis of human knowledge); *Categories*, *Prior and Posterior Analytics* (topics in logic, the structure of scientific knowledge, human knowledge and the real); *Nicomachean Ethics*, *Politics* (moral and social life). Lectures, outlines.

(4) (De Boer)

120—GREAT RELIGIONS OF THE WORLD. A study of several religions in relation to the culture in which they arose: Chinese religions, Shinto, Hinduism, Buddhism, the religion of ancient Greece, of Israel, Judaism, Christianity, Mohammedanism.

(4) (De Boer)

125—PHILOSOPHY OF RELIGION. A philosophical examination of religious ideas, including such topics as the origin of religion; the nature of religion; the various conceptions of God, the soul, sin and salvation; and some consideration of the relationships between religion and other aspects of life, such as art, science, and practical activity.

(4)

130—METAPHYSICS. Investigation of major problems and doctrines in the field of philosophy so far as it concerns the general structure of reality: the significance of recent scientific advances; the status of space and time, of change and causality, of events, substance and relation; the nature and status of matter, soul, value, God; an attempt to appreciate the intent and procedure of contending metaphysical theories, such as naturalism, idealism, dualism, monism, mysticism, realism, pragmatism.

(4) (De Boer)

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.

(4) (Kuiper)

201a—SEMINAR IN PHILOSOPHY. One two-hour meeting a week for discussion of current developments in philosophy as found in recent books as well as in periodicals. Readings and reports.

(2) (Staff)

201b—SEMINAR IN PHILOSOPHY. Continuation of 201a.

(2) (Staff)

210a—TYPES OF LOGICAL THEORY. An intensive study of recent and contemporary contributions to logical theory; C. I. Lewis, B. Russell, R. Carnap, John Dewey and others.

(4) (Kuiper)

210b—TYPES OF LOGICAL THEORY. Continuation of 210a.

(4) (Kuiper)

220a—RESEARCH IN PHILOSOPHY.

(4) (Staff)

220b—RESEARCH IN PHILOSOPHY.

(4) (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 twenty-four of the thirty-six quarter 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. Nine quarter 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 require a qualifying examination during the second year of graduate work. Of the total quarter hours presented by the candidate at least eighteen quarter 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 nine quarter 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 public opinion and pressure groups; a survey of the history, organization methods and functions of political parties in the United States; first hand studies of the individual's participation in government.

(5) I, IV (Shannon)

173—PUBLIC OPINION. The concept of public opinion; public opinion as an agency of political control; influence of the press, radio and other means of influencing public opinion; propaganda technique and control; competition of pressure groups for political influence.

(5) II, IV (Shannon)

Related Courses in Other Departments

Psychology 104—Social Psychology.

Sociology 15—Social Control.

II. PUBLIC ADMINISTRATION

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.

(5) IV (Reeves)

177a—PUBLIC ADMINISTRATION. A functional study of governmental administration, with emphasis on the theory and practice of administration, with evolution of administrative organization, and staff functions of government, including personnel and financial administration.

(5) I, IV (Kammerer)

177b—PUBLIC ADMINISTRATION. A continuation of Political Science 177a, with emphasis on the line functions of government, including the protection of life and property, judicial administration, law enforcement, public health, welfare, education, conservation and business regulation.

(5) II, IV (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.
Psychology 112—Personnel Administration.
Sociology 107—Community Welfare Work.
Sociology 112—Community Organization.

III. THEORY

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

171b—MODERN POLITICAL THEORY. The theories of Machiavelli, Bodin, Grotius, Hobbes, Locke, Montesquieu, Rousseau and of the American and French Revolutions, the English Utilitarians, Democratic Political Theory, Socialism, Fascism, Anarchism, Syndicalism, Guild Socialism, Communism.
(5) II (Shannon)

175—CONTEMPORARY AMERICAN POLITICAL THOUGHT. Conceptions of the respective roles of national and local governments subsequent to the war between the states; American ideas of *laissez-faire* and free enterprise: resistance to monopoly; the new nationalism, the new freedom, the new deal, American Development of Socialism and Communism; Current ideas of America's role in world affairs.
(5) III (Shannon)

Related Courses in Other Departments

Philosophy 101a and 101b—History of Philosophy.
Philosophy 110a—Making of the Modern Mind.

IV. COMPARATIVE GOVERNMENT

155a—COMPARATIVE GOVERNMENT — PARLIAMENTARY DEMOCRACIES. A study of the government of England, Ireland and the British self-governing dominions.
(5) II, IV (Edelmann)

155b—COMPARATIVE GOVERNMENT — CONTEMPORARY DICTATORSHIPS. A study of the government of Europe including France and Switzerland and the dictatorship of Italy, Germany and Russia.
(5) III (Edelmann)

V. PUBLIC LAW

159a—AMERICAN CONSTITUTIONAL DEVELOPMENT, 1787-1868. Chronological survey of the making of the constitution and its interpretation through principal statutes and judicial decisions; some emphasis upon the economic and social interests which influenced this growth.
(5) I, IV (Trimble)

159b—AMERICAN CONSTITUTIONAL DEVELOPMENT. From the adoption of the Civil War Amendments to the present time. Congressional policies embodied in social-economic legislation; doctrines developed by the Supreme Court. Analysis and criticism of chief cases on "due process," congressional powers and changes in the federal systems.

(5) II, IV (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.

(5) II (Reeves)

Related Courses in Other Departments

History 131a-131b—English Constitutional History

Law 149—Municipal Corporations.

Law 161a-161b—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, the Monroe Doctrine, Pan-Americanism, Pan-Hispanism, Latin America and the League of Nations.

(5) III, IV (Edelmann)

150—INTERNATIONAL LAW. Sources and sanctions of international law, recognition, intervention, jurisdiction, nationality, protection of citizens abroad, diplomatic intercourse of states, the making, termination and interpretation of treaties, the treatment of aliens and international claims.

(5) II, IV (Vandenbosch)

160—AMERICAN FOREIGN RELATIONS. Chief principles and problems of American Foreign policies; the part of the House, the Senate, the Constitution and the President, of the initiation, conduct and control of foreign policies; the organization of the Department of State, the selection of personnel, the status and duties of foreign service officers.

(5) IV (Vandenbosch)

165—WORLD POLITICS. A study of diplomatic history before and after the war with particular stress on the importance of alliances, imperialism, nationalism, militarism, and secret diplomacy. The latter part of the course deals with the development of international conferences, the League of Nations and the recent foreign policy of the important nations.

(5) I, IV (Edelmann or Vandenbosch)

168—GOVERNMENTS AND POLITICS OF EASTERN ASIA. An introductory study of the political institutions of China, Japan, the Philippines, the Dutch East Indies and India. Constitutional principles, governmental organization, the party systems, current political issues and contemporary problems of international relations.
(5) II, IV (Vandenbosch)

Related Courses in Other Departments

Economics 127—International Economic Policies.

History 100a-100b—The diplomacy and foreign policy of the United States.

History 190a-190b—The Far East.

History 120—The Twentieth Century.

Law 164—Conflict of Laws.

Courses Open Only to Graduate Students

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.

(5) III, IV (Shannon)

204—INTERNATIONAL RELATIONS AND ORGANIZATION. Theories of international relations; origin and development of international organizations; structure, operation and problems of international organizations.

(5) II, IV (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 registering for the course.

(5) II, IV (Shannon)

210—SUPREME COURT AND POLITICS. Intensive study of the federal judiciary in the political and economic order. Factors in decision-making; personnel of the court; relations to other departments and processes of the national government and to the states; trends in the principle of judicial review.

(5) I, IV (Trimble)

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, economic and political aspects and implications of these rights. Special attention will be given to the decisions of the United States Supreme Court.

(5) I, IV (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 and social development of the country and the resulting alteration of our constitutional system. Special attention will be given to the development of such provisions of the Constitution as the commerce clause, the taxing clause and of grants-in-aid and the more important measures of the New Deal.

(5) I (Trimble)

217—CONTEMPORARY AMERICAN DIPLOMATIC PROBLEMS. The Monroe Doctrine; Pan-Americanism; non-recognition doctrine; problem of the Philippines; Far Eastern policy; non-belligerency; American-Canadian relations; control of foreign relations.

(3) II, IV (Vandenbosch)

271—CONTEMPORARY POLITICAL THEORY. Seminar. An intensive investigation of political ideologies since the Industrial Revolution. Emphasis is placed upon the attack and defense of democracy, socialism, fascism, and pluralism.

(3) IV (Shannon)

PSYCHOLOGY (See Biological Sciences)

SOCIAL WORK

The graduate curriculum is offered to students interested in social work as a profession and leads to a certificate. Prerequisites: Graduate standing, the equivalent of an undergraduate major and the consent of the department. Students lacking the prerequisite number of hours in the social sciences will be required to carry additional courses to make up the deficiency in this field. Application should be made to the department in advance of registration.

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: S. W. 122 and 151.

(2) III (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.

(4) II, IV (Wetzel)

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

(2) III (Gail)

113—INTRODUCTION TO SOCIAL CASE WORK I. An introductory course in the generic principles of social case work. Dis-

cussion based on selected readings and case records. For majors in the department, prerequisite: eight hours in social work.

(2) III (Taylor)

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

(4) I (Wetzel)

122—FIELDS OF SOCIAL WORK. An introduction to the function, method, and philosophy of contemporary social work. The divisions of the field (case work, group work, community organization, institutional work, social action and research), the relationship of social work to the social sciences and allied professions, and the professional status of social work will be considered.

(4) I, II, III, IV (Wetzel)

124—ORIENTATION TO SOCIAL WELFARE PRACTICE I. An introduction to the organization and function of selected social work agencies in the community. Lectures, discussions, and observational visits.

(4) I (Wetzel)

127a, b, c—TUTORIAL WORK IN SOCIAL WORK. Open only to senior majors in the department and to graduate students by permission.

(1) I, II, III (Staff)

130a—COMMUNITY ORGANIZATION FOR SOCIAL WELFARE. Method and techniques of social welfare planning for the treatment and prevention of social problems. Analysis of needs and resources, coordination of existing agencies, financing and developing chest and council programs, and the interpretation of social work to the community, will be among the subjects treated.

Prerequisite or concurrent, S. W. 122.

(2) I (Rucker)

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

Prerequisite or concurrent, S. W. 122.

(2) I (Rucker)

131—INTRODUCTION TO FIELD WORK. PRACTICE IN COMMUNITY ORGANIZATION. One hundred clock hours of supervised work in planning and execution of simple projects in community organization. By special permission.

(2) III (Rucker)

140—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.

(4) III (Rucker)

144—FIELD PARTICIPATION IN GROUP WORK PROGRAMS. Supervised experience in the practice of group work in connection

with a program in a local group work agency. For senior majors specializing in group work.

Prerequisites: S. W. 140 and consent of instructor. (4) I, IV (Rucker)

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 provision of the social security act, general relief, and work relief policies.

Prerequisite or concurrent, S. W. 122. (4) II, IV (Wetzel)

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

Prerequisite: S. W. 113 or special permission. (2) II

218—TREATMENT OF THE INDIVIDUAL OFFENDER. (4)

220a—SUPERVISED FIELD WORK. One hundred and fifty clock hours of supervised field work in a public or a private agency. (3) I, IV

220b—SUPERVISED FIELD WORK. One hundred and fifty clock hours of supervised field work in a public or private agency. (3) II, IV

220c—SUPERVISED FIELD WORK. Two hundred clock hours of supervised field work in a public or private agency. (4) III, IV

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.

Prerequisite S. W. 217. (2) III

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) III (Wetzel)

227—RURAL SOCIAL WORK PROBLEMS. Rural needs and social welfare programs to meet them will be studied in selected rural areas and the findings will be related to larger social welfare problems and programs. The relationship of social work programs to other community programs in these areas will also be considered.

(4) III (Rucker)

SOCIOLOGY

101—POVERTY AND DEPENDENCY. A study of poverty and social dependence and of measures for their alleviation and re-

duction, with special attention to present private and public activities in this direction, including social insurance.

(4) I (Best)

102—SOCIAL PATHOLOGY. A systematic examination of the various types of social disorganization, with particular emphasis upon the sociological explanation of underlying factors.

(4) 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.

(4) II, IV (Best)

104—SOCIAL PSYCHOLOGY. (Same course as Psychology 104, Social Psychology). Description and explanation of social phenomena in terms of the original and acquired reaction systems of the individual. Topics given special attention: crowd and mob behavior, propaganda, and nationalism.

(4) II, IV (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.

(4) I (Sanders)

109—THE FAMILY. A study of the family, both in its historical aspects and in connection with modern life.

(4) I, III (Hatch)

111—PSYCHO-SOCIAL RELATIONS IN INDUSTRY. (Same course as Psychology 106, Industrial Psychology). A psycho-social approach to problems arising from the division of labor in modern industrial society.

(4) I, III

112—THE COMMUNITY. Major structural and functional aspects of modern American community types are viewed in terms of developmental processes, human ecology, and current problems of control and planning.

(4) II (Hatch)

114a-b—INDEPENDENT WORK IN SOCIOLOGY. Study of some special topic by duly authorized students.

(1) I, II, III, IV (Staff)

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

(4) I (Sanders)

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

(4) II, III (Anderson)

122b—SOCIOLOGICAL THEORY AND METHODOLOGY. A continuation of Sociology 122a.

(4) II (Staff)

124—TECHNIQUES OF SOCIAL INVESTIGATION. (Offered occasionally). A study of the practical applications of sociology in organizing, conducting, and interpreting social surveys and other forms of concrete research. Some background in statistics desirable for the student.

(4) III (Hatch)

125—AMERICAN REGIONALISM. (Offered occasionally). Regional similarities and differences in American society and culture are delineated, and derived problems are subjected to a sociological analysis.

(4) I

126—OCCUPATIONAL ORGANIZATION. A sociological analysis of the division of labor in contemporary society, including detailed consideration of professionalism through a study of the social organization of several selected professions.

(4) II

127—DIFFERENTIATION AND STRATIFICATION. A systematic treatment of the factors underlying differentiation and stratification, with particular attention to problems of caste and class.

(4) III (Anderson)

128—HUMAN RESOURCES OF THE SOUTH. An intensive analysis of the population and sociological organization of the south. Consideration of the sociological factors influencing the optimum development and utilization of the human resources of this region.

(4) III (Anderson)

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

(4) III (Best)

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

(4) IV (Sanders)

Courses Open Only to Graduate Students

201a-b—SOCIOLOGY SEMINAR. Consideration mainly of methods of research and of current sociological literature.

(2) II, III (Staff)

209—SEMINAR IN THE FAMILY. A seminar for advanced students interested in family research, family counselling, or dealing with family relationships in some other professional capacity.

(2) IV (Sanders)

223—SOCIAL TREATMENT OF DELINQUENCY. Methods for dealing with delinquents are analyzed and evaluated in historical perspective.

(2) III (Best)

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

(4) III (Best)

225—SYSTEMATIC SOCIOLOGY. An intensive study of certain selected sociological theorists such as Weber, Durkheim, Simmel, Pareto, and others.

(4) I (Anderson)

226—SOCIAL LEGISLATION. Leading developments in the field of social legislation are traced, and current measures and proposals are evaluated.

(2) IV (Best)

III. BIOLOGICAL SCIENCES

AGRONOMY (See Agriculture)

ANATOMY AND PHYSIOLOGY

105—ARCHITECTURE OF THE HUMAN SKELETON. The course is designed for the student who wishes advanced study in Anatomy and Physiology, for students of Anthropology, for students in Art, and for those who are preparing for the study of medicine. The study begins with the development of the skeleton and joints. This is followed by the process of ossification and the histology of bones. Each bone of the body is studied in great detail, organized demonstrations are given with architecture and function being stressed. Variations in the skeleton are also considered and whenever possible, the bone is compared with that of the lower vertebrates. The physiology of the bone, joint and muscular relations are studied in detail. Lecture and recitation, two hours a week; laboratory, six hours a week.

(5) I (Allen)

106—INTRODUCTION TO ENDOCRINOLOGY. This is an introductory study of the glands of internal secretion or the endocrine glands in which the general development, anatomical location and structure, and fundamental functions of the organs are presented. The purpose of the course is to give a general knowledge in this particular field rather than a technical and detail knowledge. The course will be found to be of value not only to the student of Anatomy and Physiology and related subjects but also to those students of education and sociological interests. Lectures and discussions, four hours a week.

Prerequisites: A. & P. 1a and 1b (4) II (Allen and Archdeacon)
or the equivalent; Zoology
7b; Chemistry 1a and 1b;
and with the consent of
the instructor.

107—ADVANCED ANATOMY. An introduction to the anatomy and physiology of the nervous system. The aim of the course is to provide an introductory laboratory course on form, structure, and functional arrangements of the nervous system for students of biology, physiology, psychology and those preparing for the study of medicine or the medical sciences. The work of the course includes a careful study of the nervous systems of vertebrates. The simpler types of nervous systems are compared with that of man. The development of the various reflexes are considered. The relation of the structure of the nervous system to psychological reactions are

studied. Lectures and recitations, three hours a week; laboratory, four hours a week.

Prerequisites: A. & P. 1a and 1b;

Zoology 101 and Zoology 106. (5) III (Allen and Cole)

108a—ADVANCED PHYSIOLOGY. The course, as a whole, is designed for students who anticipate further advanced study in physiology or in the medical sciences. In this part of the course the nervous system which includes the structures and functions of the spinal cord, the medulla oblongata, the cerebellum, the cerebrum and the autonomic system are taken up in great detail. This is followed with an intensive study of the special sense-organs. Lectures, recitations, two hours a week; laboratory four hours a week.

Prerequisites: A. & P. 1a and 1b

or the equivalent; Chemistry

1a and 1b; Physics 1a and

1b; also, the consent of the

instructors. (4) I (Allen, Archdeacon, Cole and Wiedeman)

108b—ADVANCED PHYSIOLOGY. This division of the course will open with the consideration of muscle-physiology and will include both skeletal and smooth muscle tissue. Experiments are performed to demonstrate that muscle is a thermogenic and an electrogenic organ. In addition to the muscle studies, the circulatory and respiratory systems will be thoroughly surveyed. Lectures and recitations two hours a week; laboratory, four hours a week.

Prerequisites: Same as for A. & P. 108a.

(4) II (Allen, Archdeacon, Cole, and Wiedeman)

108c—ADVANCED PHYSIOLOGY. The subject matter will include the following: The gastro-intestinal tract with its secretory organs; the processes of digestion, absorption, excretion and heat production; voice and the mechanics of speech. Lectures and recitations, two hours a week; laboratory, four hours a week.

Prerequisites: Same as for A. & P. 108a.

(4) III (Allen, Archdeacon, Cole and Wiedeman)

109—APPLICATION OF PHYSICAL PRINCIPLES TO THE HUMAN BODY. This course is especially designed for students interested in Anatomy and Physiology or the natural sciences. Students of the physical sciences as well as others will also find the course to be of practical and cultural value. The course is opened by thoroughly acquainting the student with the various physical phenomena that are to be considered. This will be followed by applying the same to the physiological processes of the body. Such will include stress and strain with respect to the bones of the skeleton, types of levers involved in joint action, permeability, calorimetry, mechanics of circulation and temperature regulations, mechanics of vision,

mechanics of hearing, mechanics of speech or voice. Lectures and recitations, three hours a week; laboratory, two hours a week.

Prerequisites: A. & P. 1a and 1b (4) II (Archdeacon)
or the equivalent; *Physics* 1a
and 1b; *Chemistry* 1a and 1b.

116c—SEMINAR IN ANATOMY AND PHYSIOLOGY. All students who are majoring in the department are required to take this course. At each meeting of the seminar, an assigned scientific article of physiological or anatomical subject matter will be reviewed thoroughly by a member of the seminar and then discussed in general. In addition to the foregoing, each member of the seminar will be required to follow closely the current publications bearing upon the subjects of the class and present brief reports of such articles which are of interest. One two-hour discussion period a week.

Prerequisites: A. & P. 1a and 1b (1) I, II, III, IV (Staff)
or the equivalent.

116d—SEMINAR IN ANATOMY AND PHYSIOLOGY. Continuation of 116c. One two-hour discussion period a week.

Prerequisites: A. & P. 1a and 1b (1) I, II, III, IV (Staff)
or the equivalent.

201a—RESEARCH IN PHYSIOLOGY. The pursuit of an assigned problem in which the student will have the opportunity to demonstrate originality. Conference and laboratory, twelve hours a week.

Prerequisites: A. & P. 1a and 1b
or the equivalent; *Chemistry*
127a and 127b (131a and
131b desirable); *Physics*, one
year. (6) I (Allen and Archdeacon)

201b—RESEARCH IN PHYSIOLOGY. Continuation of 201a. Conferences and laboratory, twelve hours a week.

Prerequisites: A. & P. 1a and 1b
or the equivalent; *Chemistry*
127a and 127b (131a and
131b desirable); *Physics*, one
year. (6) II (Allen and Archdeacon)

201c—RESEARCH IN PHYSIOLOGY. Continuation of 201b. Conferences and laboratory, twelve hours a week.

Prerequisites: Same as 201a
and 201b. (6) III (Allen and Archdeacon)

ANIMAL PATHOLOGY (See Agriculture)

ANTHROPOLOGY

101—PRINCIPLES OF ANTHROPOLOGY. Fundamental principles of anthropology; relationships of physical anthropology, anthropometry, ethnology, ethnography and archaeology; anthropology of the New World; North American prehistory; ancient human occupation in the Mississippi Valley; outline of man's prehistoric past in Kentucky; anthropological studies of Kentucky materials.

(3) III (Funkhouser)

102—KENTUCKY ARCHAEOLOGY. A rapid survey of the more important prehistoric cultures found in North America and the sequence of cultures found in Kentucky to the time of the white settlers.

(3) Haag

103a-d—INDEPENDENT WORK IN ANTHROPOLOGY AND ARCHAEOLOGY (Given every year).

(3) (Staff)

105—ETHNOLOGY OF ASIA AND AFRICA. A study of the present races of mankind. The origins, migrations and present distribution of these races and their subdivisions. Three recitations per week.

(3) I (Funkhouser)

106—ETHNOLOGY OF EUROPE. A study of the origins and migrations of the ethnological groups of Europe. Three recitations per week.

(3) II (Funkhouser)

107—ETHNOLOGY OF THE NEW WORLD. A study of the origins and migrations of the ethnological groups of the new world. Three recitations per week.

(3) III (Funkhouser)

108—THE DEVELOPMENT OF CULTURE. A study of the origin of human culture and of the history of human cultural behavior. The course will contain a study of the origin and development of primitive behavior along cultural lines. It will not be presented as a series of studies of static culture but rather to show the flow of culture from basic human beginnings to present day civilization.

(3) III (Haag)

115—NORTH AMERICAN ARCHAEOLOGY. A study of the origin and growth of prehistoric American Indian cultures north of Mexico as revealed by archaeological data. Lectures and selected readings for paper preparations.

(3) (Haag)

125—PHYSICAL ANTHROPOLOGY. A detailed course treating man as a biological organism. Lectures on measuring techniques, the primates, fossil man, races, racial admixture, growth, dentition, and osteopathology. Three hours lecture and two hours laboratory.

Prerequisite: Anthropology 1 or four hours

in any other biological science.

(4) I, III, IV (Snow)

150a-d—SEMINAR. Presentation and discussion of current literature and recent research in anthropology and reports on work in progress in the development. Required of all majors.

(1) I, II, III, IV (Staff)

BACTERIOLOGY

102—GENERAL BACTERIOLOGY. Observation and cultivation of bacteria and related microorganisms; study of their morphology, classification, physiology, relation to certain fermentations, to food, to soil fertility and to disease. Lectures and recitations, three hours; laboratory, six hours a week.

Prerequisite: Chemistry 1b. (6) I, II, III, IV (Scherago and others)

103—PATHOGENIC BACTERIOLOGY. A study of human and animal pathogenic microorganisms, especially their morphological, cultural and pathogenic properties. Lectures and recitations, three hours; laboratory, six hours a week.

Prerequisites: Bacteriology (6) I, IV (Scherago, Hotchkiss,
102 or 52; or 2b and and Humphries)
Chemistry 1b.

104—APPLIED BACTERIOLOGY. A course in bacteriological analysis to supplement Courses 52 and 102. Laboratory six hours a week.

Prerequisites: Preceded or Accompanied (3) I, II, III, IV
by Bacteriology 102 or 52; (Weaver, Hotchkiss,
or 2b and Chemistry 1b. and Humphries)

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

Prerequisite: Preceded or accompanied (3) I, IV (Hotchkiss)
by Bacteriology 103.

110b—LABORATORY DIAGNOSIS. Continuation of 110a. Examination of stomach and intestinal contents and blood. Laboratory, six hours a week.

Prerequisite: Same as for 110a. (3) II, IV (Hotchkiss)

110c—LABORATORY DIAGNOSIS. Continuation of 110b. Laboratory diagnosis of parasitism; laboratory methods used in diag-

nosis of gonorrhea, typhoid fever, diphtheria, syphilis, etc. Laboratory, six hours a week.

Prerequisite: *Preceded or accompanied by* (3) III, IV (Hotchkiss) *Bacteriology* 125b.

111—GENERAL PATHOLOGY. The effects of disease on the organs and tissues of the human body will be studied at autopsies and by the examination of fresh and museum specimens as well as histological sections. Degenerations, infiltrations, regenerations, inflammations, disturbances of the circulation, infectious granulomata, neoplasms, etc., will be studied. Lectures and recitations, three hours; laboratory six hours a week.

Prerequisites: *Anatomy and Physiology* 1a-b; (6) III, IV (Maxwell, *Zoology* 7c, 101b, and 106; *Bacteriology* Scherago, Hotchkiss) 103 and consent of head of department.

115a-f—INDEPENDENT WORK. Students will be assigned special problems in laboratory work and reference reading. Laboratory, eight hours a week.

Prerequisite: *Any Bacteriology course*
above 102. (4) I, II, III, IV (Senior Staff)

120a—HOSPITAL LABORATORY PRACTICE. Students will be required to carry out, under supervision, the laboratory work in one of the hospitals in Lexington. Laboratory, eighteen hours a week.

Prerequisites: *Bacteriology* 110a and b; (6) I, II, III, IV
consent of head of department. (Maxwell, Harrison, and others)

120b—HOSPITAL LABORATORY PRACTICE. Continuation of 120a. Laboratory, twelve hours a week.

Prerequisites: *Same as for 120a.* (4) I, II, III, IV
(Maxwell, Harrison, and others)

120c—HOSPITAL LABORATORY PRACTICE. Continuation of 120a. Laboratory fifteen hours a week.

Prerequisites: *Same as for 120a.* (5) I, II, III, IV
(Maxwell, Harrison, and others)

125a—IMMUNOLOGY AND SEROLOGY. The theories and mechanism of infection and immunity; the preparation, standardization and uses of vaccines, toxins, antibodies and other biological products related to the diagnosis, prevention and treatment of specific infectious diseases; agglutination; complement fixation, etc. Lectures and recitations, two hours a week; laboratory, six hours a week.

(5) II, IV (Scherago, Hotchkiss
and Humphries)
Prerequisite: *Bacteriology* 103.

125b—IMMUNOLOGY AND SEROLOGY. Continuation of 125a. Receptor analysis; serology of syphilis; hypersensitiveness. Lectures, one hour a week; laboratory, four hours a week.
Prerequisite: Bacteriology 125a

(3) III, IV (Scherago, Hotchkiss and Humphries)

The following courses open to Graduate students only:

201a-f—RESEARCH IN BACTERIOLOGY.

(5) I, II, III, IV (Senior Staff)

203a—PUBLIC HEALTH BACTERIOLOGY. This course considers the public health aspects of bacteriology including the etiology, epidemiology, immunology, and laboratory diagnosis of infectious diseases; the bacteriology of air, water and sewage; food poisoning; the production, standardization and practical applications of biological products used in the diagnosis, treatment, and prevention of infectious diseases; the standardization of disinfectants. Lectures and recitations, two hours; laboratory, six hours.

Prerequisite: Open only to Physicians and Health Officers or those with equivalent training. (5) I, IV (Scherago and others)

203b—PUBLIC HEALTH BACTERIOLOGY. Continuation of Course 203a. Lectures and recitation, two hours; laboratory, six hours a week.

Prerequisite: Bacteriology 203a. (5) II, IV (Scherago and others)

206a—BACTERIOLOGY OF FOODS. Relation of microorganisms to food production and handling; food preservation. Microbiology of fermentation products, canned foods, eggs, tomato products, meat and meat products, fish and shellfish, etc. Standard methods of bacterial analysis as used in official food and public health laboratories. Food poisoning. Lectures and recitations, two hours; laboratory, four hours a week.

Prerequisites: Bacteriology 2b or 52; Chemistry 21b. (4) I, IV (Weaver and Humphries)

206b—BACTERIOLOGY OF FOODS. Microbiology of milk and milk products. Standard methods of bacterial analysis as used in official food and public health laboratories. Lectures and recitations, two hours; laboratory, four hours a week.

Prerequisites: Bacteriology 2b or 52; Chemistry 21b. (4) II, IV (Weaver and Humphries)

207—BACTERIOLOGY OF WATER AND SEWAGE. The microflora of water; importance of the colon-typhoid group of bacteria in water; methods of water analysis and interpretation of results; special media used in isolating and identifying the colon-typhoid group of bacteria; methods of water purification; microflora

of sewage; methods of sewage analysis; methods of sewage disposal; bacteriological study of swimming pools, methods of analysis; effect of treatment on bacteriological content, regulations concerning swimming pools. Water purification plants, sewage disposal plants and swimming pools will be visited and studied. Lectures and recitations two hours a week; laboratory, four hours a week.

Prerequisites: *Bacteriology 2b or 52 or 102; Chemistry 21b.* (6) III, IV (Weaver and Humphries)

210—CLINICAL MYCOLOGY. A study of the patho-physiology of human and animal fungous infections. Methods and techniques for isolating and propagating pathogenic actinomycetes and fungi. Laboratory diagnosis of fungous infections. Lectures or conferences, one hour; laboratory, four hours a week.

Prerequisites: *Chemistry 130c; reading knowledge of one foreign language; preceded or accompanied by Bacteriology 125b.* (3) II (Hotchkiss)

220—HISTORY OF BACTERIOLOGY. Conferences, two hours a week.

Prerequisite: *Bacteriology 125b.* (2) I (Scherago or Weaver)

222—ADVANCED GENERAL BACTERIOLOGY. A study of bacterial morphology and life cycles; theories of staining; techniques of study. A study of the problems of identification and classification of bacteria; principles of naming and classifying bacteria; bacterial variation; role of serological procedures in identification and classification. Lectures and conferences, three hours; laboratory six hours a week.

Prerequisites: *Bacteriology 125b; Chemistry 130c.* (6) III (Scherago or Weaver)

224—DISINFECTANTS AND ANTIBIOTICS. A study of the chemical agents injurious to micro-organisms including modes of action, practical applications and methods of testing. Conferences, two hours; laboratory, six hours a week.

Prerequisites: *Bacteriology 2b, or 52 and 104; Chemistry 130c.* (5) I (Weaver or Hotchkiss)

226a—METABOLISM OF MICROORGANISMS. A study of them chemical changes produced by bacteria, yeasts, and molds; of the properties of their enzymes; of the physiology of their growth, and of their growth requirements. Lectures or conferences, three hours; laboratory, six hours a week.

Prerequisites: *Chemistry 130c and a reading knowledge of German or French; Physical Chemistry recommended.* (6) I (Humphries or Muedeking)

226b—METABOLISM OF MICROORGANISMS. Continuation of 226a. Lectures or conferences, three hours; laboratory, six hours per week.

Prerequisite: 226a.

(6) II (Humphries or Muedeking)

235—IMMUNOCHEMISTRY AND ADVANCED IMMUNOLOGY. The chemistry of antigens and of antibodies and of the reactions between them in vitro and in vivo; immune and hypersensitive cellular reactions. Lectures and conferences, three hours; laboratory, six hours per week.

Prerequisites: *Bacteriology* (6) III (Scherago or Humphries)

125b; *Chemistry* 130c and
Chemistry 143b.

250a-f—SEMINAR. Review of current literature in bacteriology; 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. Two hours a week.

(1) I, II, III (Senior Staff)

270—ELECTRON MICROSCOPY. A study of electron microscopy, with major emphasis upon the operation and uses of the magnetic electron microscope and the vacuum unit for metal evaporation, including methods of sample preparation and the technic of shadow casting. Applications in biological and physical sciences will be studied. Lecture, one hour; laboratory, six hours per week.

Prerequisites: *Physics* 3a, 3b and 3c; (4) II, IV (Edwards)
consent of instructor.

272—VIRUSES AND RICKETTSIAE. A study of the natures, activities, and methods of laboratory cultivation of viruses and rickettsiae and of their relation to bacteria, plants and animals. Lectures, three hours; laboratory, six hours per week.

Prerequisite: *Bacteriology* 125b. (6) III (Edwards)

BOTANY

103a—PLANT PHYSIOLOGY. The principles which underlie the movement of materials in plants; absorption, translocation, and transpiration. Lecture, two hours; laboratory, four hours.

Prerequisite: 1b or 8b. (4) II (McInteer)

103b—PLANT PHYSIOLOGY. A continuation of 103a; the chemical processes and organic materials occurring within the plant. Lecture, two hours; laboratory, four hours.

Prerequisite: *Botany* 103a. (4) III (McInteer)

104—GENERAL CYTOLOGY. Structure of plant and animal cells; cell division; gametogenesis, sporogenesis, fertilization, and apomixis. Lecture, two hours; laboratory, four hours.

Prerequisite: *Botany* 1b or 8b, or (4) I (Riley)

8 quarter hours of Zoology.

106a-d.—SPECIAL PROBLEMS. Special problems for individual students who are capable of pursuing independent investigations.

Prerequisite: 27 quarter hours of advanced work in botany.

(5) I, II, III (Riley, McFarland, McInteer)

107—MORPHOLOGY OF ALGAE. The economic value of algae and the structure and life histories of representative forms of the various groups. Lecture, two hours; laboratory, four hours.

Prerequisite: 1b or 8b.

(4) I (McInteer)

114—ECOLOGY. The relationship between plants and their environment; plant succession, plant associations and formations; the principles of plant geography; the vegetation of North America. Lecture, three hours; laboratory, four hours.

Prerequisite: 1b or 8b.

(5) III (McInteer)

115a-c—SEMINAR. Assigned readings and reports on specially selected topics. One hour per week. Required of all graduate and undergraduate majors.

(1) I, II, III (Staff)

124—ANATOMY OF VASCULAR PLANTS. The nature and origin of primary and secondary tissues and their distribution in plant organs; the detailed structure of some plants of economic importance. Lecture, two hours; laboratory, four hours.

Prerequisite: Botany 1b or 8b.

(4) II (Riley)

125a—MORPHOLOGY OF THE FUNGI. A comprehensive study of the many typical forms of the Myxomycetes and Phycomycetes; their structure, methods of reproduction and classification. Lecture, two hours; laboratory, four hours.

Prerequisite: Botany 1b or 8b.

(4) I (McFarland)

125b—MORPHOLOGY OF THE FUNGI. A continuation of 125a; structure, reproduction, and classification of the Ascomycetes. Lecture, two hours; laboratory, four hours.

Prerequisite: Botany 125a.

(4) II (McFarland)

125c—MORPHOLOGY OF THE FUNGI. A continuation of 125b; structure, reproduction, and classification of the Basidiomycetes; the Fungi Imperfecti; the principles involved in the isolation, culture, and identification of fungi. Lecture, two hours; laboratory, four hours.

Prerequisite: Botany 125b.

(4) III (McFarland)

126a—MYCOLOGY. The identification of unknown species of fungi; considerable time is spent in the field collecting specimens and learning the habitats of the various fungi. Laboratory, ten hours.

Prerequisite: Botany 125c.

(5) I (McFarland)

126b—MYCOLOGY. A continuation of 126a. Laboratory, ten hours.

Prerequisite: Botany 126a. (5) II (McFarland)

134—CYTO-GENETICS. The importance of chromosomes in evolution and speciation; polyploidy, chromosomal aberrations, and hybridization. Lecture, two hours; laboratory, four hours.

Prerequisites: Botany 1b or 8b; and
Animal Industry 61 or 161 or Botany 1c. (4) III (Riley)

150a—ADVANCED SYSTEMATIC BOTANY. A continuation of Botany 15; the student will be expected to identify many more and more difficult specimens than in Botany 15. A comprehensive survey of the different methods of classification will be required of each student. Laboratory, ten hours.

Prerequisite: Botany 15 or its equivalent.
(5) I, II, III (McFarland)

150b—ADVANCED SYSTEMATIC BOTANY. A continuation of Botany 150a. Laboratory, ten hours.

Prerequisite: Botany 150a. (5) I, II, III (McFarland)

206a—RESEARCH IN MORPHOLOGY. Independent investigations in plant morphology, including morphogenesis, cytology, and cytogenetics.

Prerequisites: Botany 104 or 124 or 134 and graduate standing.
(5) I, II, III (Riley)

206b—RESEARCH IN MORPHOLOGY. A continuation of 206a.

Prerequisite: Botany 206a. (5) I, II, III (Riley)

207a—RESEARCH IN MYCOLOGY. Independent investigations in mycology.

Prerequisites: Botany 125c and graduate standing.

207b—RESEARCH IN MYCOLOGY. A continuation of 207a.
(5) I (McFarland)

210a—RESEARCH IN PLANT PHYSIOLOGY. Independent investigations in plant physiology.

Prerequisites: Botany 103b; Chemistry 20c and 131c and graduate standing.

210b—RESEARCH IN PLANT PHYSIOLOGY. A continuation of 210a.

Prerequisite: Botany 210a

213a—RESEARCH IN SYSTEMATIC BOTANY. Any student who has shown ability and initiative in Botany 150a and b or its equivalent and who is working on an advanced degree, may register for this course; the student may elect to work on the flora of the county in which he lives or on some other local region or

he may be assigned to work up some family or order of plants. A student may elect this course in the preparation of his collection which is to be incorporated in his thesis.

Prerequisite: Botany 150b and graduate standing.

(5) I, II, III (McFarland)

213b—RESEARCH IN SYSTEMATIC BOTANY. A continuation of 213a.

Prerequisite: Botany 213a.

(5) I, II, III (McFarland)

213c—RESEARCH IN SYSTEMATIC BOTANY. A continuation of 213b.

Prerequisite: Botany 213b.

(5) I, II, III (McFarland)

ENTOMOLOGY (See Agriculture)

HORTICULTURE (See Agriculture)

HYGIENE AND PUBLIC HEALTH

The Department of Hygiene and Public Health offers graduate work leading to the degree of Master of Arts, Master of Science, or the professional degree of Master of Science in Public Health.

The courses offered by the department which are accepted for graduate credit are as follows:

100a—PUBLIC HEALTH. A consideration of the cause, prevalence, transmission and control of preventable diseases.

(4) I, III, IV (Chambers and Heinz)

100b—PUBLIC HEALTH. A continuation of 100a. Environmental and organization approach to disease prevention.

(4) II, IV (Chambers and Heinz)

110—HEALTH EDUCATION AND HEALTH SUPERVISION OF SCHOOLS. A course dealing with principles of health education, and the cooperative nature of school health work through study of problems in the solution of which contributions are made by parents, school and community.

(4) II, IV (Heinz)

111a, b—INDEPENDENT WORK IN HYGIENE AND PUBLIC HEALTH.

(4) I, II, III, IV (Staff)

115—COMMUNICABLE DISEASES. A study of communicable diseases with reference to causal agents, transmission, and their methods of prevention and control.

(4) IV (Hamilton)

PSYCHOLOGY

The Department of Psychology, upon the recommendation of the American Psychological Association, has been approved as a training department for the Ph. D. in psychology with a major in clinical psychology. The Department uses as its training facility the United States Veterans Hospital located within three miles of the University, and plans to use a similar facility located in Louisville, Kentucky, for its third-year interns.

The Department has accumulated for a number of years a mass of test records of the intelligence, special abilities and achievements of students in all the colleges of the University. It also has estimates of personal traits and the histories of many students. Taken together, these afford a rare opportunity for graduate work in student personnel problems. The Personnel Office is also affiliated with the Department.

In order to provide training for guidance counselors in the schools and colleges of the State this department has arranged, in cooperation with the College of Education, a comprehensive plan for training in this field including practice and research. A year of graduate training in guidance entitles a teacher to a certificate as a "guidance counselor" from the State Department of Education. In cooperation with the registrar it has also paid special attention to the preparation of registrars.

Another field in which special facilities are provided is that of the psychological clinic. The Department has maintained such a clinic for years. It has established close contact with the public schools, the welfare agencies, the Eastern State Hospital for the Insane, the reformatory institutions, and the State Institution of the Feeble-Minded, all of which are located at or near Lexington.

The Mental Hygiene Service in cooperation with the University Health Service assists students in solving problems of personal adjustment. Through discussion with professionally accredited psychologists, the student is helped to understand and to utilize his fundamental abilities, emotions, and interests. It furnishes opportunities for practice and research. This is especially useful for counselors in schools and colleges.

The Department undertakes special research in business and industrial personnel problems. It is well equipped for experimental and statistical studies in these fields. Connected with the Department is a Kentucky Station of the Psychological Corporation, a national organization for conducting authoritative work in applied psychology.

The experimental laboratory is especially equipped for the objective determination of emotions, their relation to perceptual acts, sets, drives, conditioning, etc.

An animal behavior laboratory is also provided and equipped for class and research work on lower animals. Standardized strains of white rats are available.

Apparatus, test equipment, and library facilities are suitable for advanced work in the list of courses which follows. For graduate majors in the Department, it is assumed that the student has had fundamental training in general psychology, and in biological or social sciences.

101—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 its equivalent (3) I (Mellenbruch)

102—PRACTICE IN TESTING: PERSONALITY TESTS. The purpose of this course is to give the student practical training and experience in the use of a selected list of personality tests and closely related techniques, commonly used in evaluating the non-intellectual aspects of personality. Six hours a week.

Prerequisite: Psychology 8 or its equivalent.

(3) II (Mellenbruch)

103—PRACTICE IN TESTING: APTITUDE AND TRADE TESTS: This course provides laboratory practice in the use, scoring, and interpretation of individual tests used in the fields of vocational and educational guidance and selection. Six hours a week.

Prerequisite: Psychology 8 or its equivalent.

(3) III (Mellenbruch)

104—SOCIAL PSYCHOLOGY. Description and explanation of social phenomena in terms of the original and acquired reaction systems of the individual. So-called types are characterized in respect to the social problems they present. Topics given special consideration: crowds, mob behavior, propaganda, and nationalism.

Prerequisite: Psychology 1.

(4) II (White)

105—EMPLOYMENT PSYCHOLOGY. Emphasis is placed on the characteristics of an effective interview, the significance of certain items in the application blank, the use of objective tests in selections, and the relation of adjustment, interests, special abilities, and experience to job fitness. Opportunities are provided for practice in interviewing and evaluating essential information in employment work. Three hours of lecture, two hours of laboratory a week.

*Prerequisite: Psychology 8
or its equivalent.*

(4) II (Calvin)

106—INDUSTRIAL PSYCHOLOGY. Applications of psychology to industrial personnel problems: training and upgrading of em-

ployees, merit ratings, factors involved in industrial fatigue, surveys of attitudes, improvement of morale, reduction of turnover and absenteeism, safety promotion, providing incentives, welfare provisions, etc. Opportunities are provided for observation of successful methods in use in industrial situations. Three hours of lecture, two hours of laboratory a week.

Prerequisite: Psychology 1
or its equivalent.

(4) I, III (Calvin)

109—EXPERIMENTAL PSYCHOLOGY: THE SENSES. The nature of the adequate stimuli, the sensory responses, and the techniques of measuring thresholds are the chief topics. Some consideration is given to spatial and form responses. One hour lecture and four hours laboratory a week.

Prerequisite: Psychology 1.

(3) I (Calvin)

110—EXPERIMENTAL PSYCHOLOGY: PERCEPTUAL PROCESSES. Attention, association, thinking, feeling, and problem solving are investigated experimentally. The primary purpose of the experiments is to acquaint the student with the laboratory techniques involved in the study of the above concepts. One hour lecture and four hours laboratory a week.

Prerequisite: Psychology 1.

(3) II (Calvin)

113—PSYCHOLOGY OF LEARNING. An experimental study of the learning process with an analysis of types of learning. The lectures are centered around the topics of the nervous mechanism in learning and the conditioned response. In the laboratory, the conditions which affect learning are studied. Examples of such conditions are: the effect of drugs; the relation of length, amount and complexity of the material, and of the mode of attack to learning. One hour lecture and four hours laboratory a week.

Prerequisite: Psychology 1.

(3) III (Calvin)

114—ABNORMAL PSYCHOLOGY. An intensive course on disturbed conduct and thinking are 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 is provided.

Prerequisite: Psychology 1.

(4) III (Dimmick)

115—GENETIC PSYCHOLOGY. Influence of hereditary factors in the development of human behavior, with a critical survey of the problem and the evidence in connection with certain psychological traits such as musical and other special abilities, intelligence, insanity, and interests.

Prerequisite: Psychology 1.

(4) II (Newbury)

116—COMPARATIVE PSYCHOLOGY. One hour of lecture, two hours of laboratory a week. A survey of the field of animal

behavior with special reference to experimental technique. Opportunity for research experience in an animal laboratory. Topics include problems of heredity and environment, activity, instinct, motivation, learning, sensory discrimination, and personality in sub-human species. Relationships to human problems indicated.

(5) III (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. A minimum of six hours per week is required.

(3) I, II, III, IV

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

Prerequisite: Psychology 1.

(4) III (Croft)

124—MENTAL HYGIENE. The objective of the course is to give 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. (Same as Hygiene and Public Health 120a)

(4) I (Ratliff)

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 in the University Nursery, Pre-school and Elementary School.

Prerequisite: Psychology of the Child.

(4) II (Humphreys)

126—MENTAL HYGIENE OBSERVATION. A continuation of Psychology 124. Students are given the opportunity to apply to concrete cases the principles and concepts developed in 124. This course is offered also as Hygiene 120b, but could not be carried in both departments.

Prerequisite: Psychology 124 or Hygiene 120a.

(4) III (Ratliff)

Courses Open Only to Graduate Students

201a—SEMINAR IN PSYCHOLOGY. One two-hour discussion each week of some current systematic concepts and research under way by graduate students and members of the staff.

(1) I (Staff)

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

(1) I, II, III, IV (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.

(3) I (Staff)

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

(3) I, II, III, IV (Staff)

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

(5) I (Staff)

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

(5) I, II, III, IV (Staff)

211—MENTAL WORK AND FATIGUE. A laboratory course. Four hours devoted to experiments and one hour discussion each week. Prerequisites, an advanced course in experimental psychology and elementary statistics or their equivalent.

(4) I (White)

212—THE EMOTIONS. A laboratory course. Four hours devoted to experiments and one hour discussion each week. Prerequisites, an advanced course in experimental psychology and elementary statistics or their equivalent.

(5) II (Calvin)

213—THE OBSERVATION PROCESS. A laboratory course. Four hours devoted to experiments and one hour discussion each week. Prerequisites, an advanced course in experimental psychology and elementary statistics or their equivalent.

(5) II (Calvin)

215—PSYCHOMETRICS. An advanced course which considers the treatment and interpretation of human measurements. The course deals with the computation and interpretation of simple, partial and multiple correlations, regressions, equations, and reliability of measures.

*Prerequisites: Math. 24
or its equivalent.*

(5) III (Mellenburch)

217—PSYCHOLOGY OF LANGUAGE. An experimental course dealing with both written and spoken language. The development and physical basis of language, together with its function in thought processes. The main emphasis will be placed on the experimental phases of the subject. Two hours lecture and two hours laboratory each week.

(4) III (Humphreys)

219—CLINICAL PSYCHOLOGY. Two hours clinic and two hours lecture. 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.

(5) III (Dimmick)

220—HISTORY OF PSYCHOLOGY. An historical presentation of the origin and development of psychological thought in Ancient Greece, modern, rational, empirical and the beginning of experimental psychology with the discussion of the various approaches to science.

(3) I (White)

221—SYSTEMATIC PSYCHOLOGY. The evaluation of the fundamental concepts and current schools of psychology.

(3) II (White)

236—OCCUPATIONAL INFORMATION. Three hours lecture, two hours laboratory. A study is made of the characteristics required for various occupational groups. Emphasis is placed on occupational ability patterns, occupational trends, job opportunities, and working conditions.

Prerequisite: Psychology 8.

(4) I, III (Henry)

237—CLINICAL TESTING. Provides the student with extensive experience in the use of clinical diagnostic techniques with a variety of pathological subjects at different age levels. Emphasis will be placed upon the critical analysis and evaluation of the patient's test performances. In the interpretation of test results, a major emphasis will be placed upon the interrelations existing in respect to the total picture presented by the patient as these become meaningfully correlated with the data of the social history, the medical history, and the psychiatric study. Eight hours a week.

Prerequisite: Psychology 101.

(3) I, II, III (Watson)

238—THE RORSCHACH TEST. Introduces the student to the Rorschach test as a clinical instrument. The course provides for practice in administering, scoring, and interpreting the test data derived from a diversity of normal and pathological subjects. Emphasis is placed upon the integration of the Rorschach data with that derived from other sources and its particular value in delineating the effective and conative factors of the personality as these

play a dynamic role in the individual's competence in handling his reality relationships. One hour lecture, ten hours laboratory.
Prerequisite: Psychology 219. (6) I, II, III, IV (Dimmick)

239—THE THEMATIC APPERCEPTION TEST. Introduces the student to the Thematic Apperception test as a clinical diagnostic procedure. The course will provide practice in administering, scoring, and interpreting data from normal and pathological subjects. Data obtained serve to supplement and fill in the personality framework etched in outline by the Rorschach and by other tests of cognitive functions.

Prerequisite: Psychology 238. (3) II, IV (Dimmick)

240—THERAPEUTIC PROCEDURES. This course will present the history, evolution, and rationale of a wide range of interrelated therapeutic procedures. These will be discussed in respect to their indications and contra-indications. Emphasis will be placed upon direct therapy, but supportive and indirect therapy will be accorded consideration. Demonstrations of selected therapeutic procedures will be provided, and the student will be given supervised experience in respect to: (1) Non-directive psychotherapy (interview), (2) Directive psychotherapy (interview), (3) Play therapy, and (4) Use of painting and drawing.

Prerequisite: Psychology 239. (4) III (Dimmick)

241—MOTIVATION. This course will survey our present knowledge, clinical, experimental, and observational, in respect to the affective and conative factors in psychopathological reactions. In this course our interest will center predominantly in the dynamics of human behavior as elaborated in the psychology of Freud and the psychoanalytic school.

(4) I (Dimmick)

300—MEDICAL THERAPEUTIC PROCEDURE. This course presents the rationale, indications, procedures, and results of two important psychiatric therapeutic methods: (1) Electrical and pharmacological shock, and (2) Narcohypnosis or drug-analytic method.

(1) I, II, III (Straus)

431a-p—SPECIAL FIELD PRACTICUM. An intensive course in field work for students planning to get a Ph. D. with a major in clinical psychology. Minimum of twenty hours a week. Laboratory fee, \$75.

(6) I, II, III, IV (White)

ZOOLOGY

101a—HISTOLOGY. Histology of the tissues. Lectures and laboratory work on the preparation of material for microscopic study. The latter part of the course is designed to acquaint the

student with microscopic manipulation and at the same time familiarize him with the tissues of the animal body.

Prerequisites: Zoology 1a, b, c. (4) I, IV (Brauer)

101b—HISTOLOGY. Histology of the organs. A continuation of Course 101a. Lectures and laboratory work on the microscopic anatomy of the animal body.

Prerequisites: Zoology 1a, b, c. (4) II, IV (Brauer)

102—ORNITHOLOGY. A study of the life histories, anatomy and physiology and taxonomy of birds with particular reference to the habits, songs, eggs, nests, migration and economic importance of our native birds.

(4) III, IV (Funkhouser, Allen)

105—PARASITOLOGY. A study of the general principles of parasitism, taxonomy, morphology, life cycles, and physiology as illustrated by the protozoan, helminth, and arthropod groups. The laboratory work consists of host examination, preparation for study, and demonstrations.

Prerequisites: Zoology 1a, b, c; 101a. (5) I

106—EMBRYOLOGY. Vertebrate development. Lectures on maturation, fertilization, cleavage, axiation, organogenesis, and anomalies of development. The laboratory work consists of a study of the germ cells, maturation, cleavage and development of the chick and of the pig.

Prerequisites: Zoology 1a, b, c; 101a. (6) III, IV (Brauer)

108a—PRINCIPLES OF ZOOLOGY. An advanced lecture course open only to juniors, seniors and graduate students on the fundamental principles of biology. The first quarter is devoted primarily to the study of organic evolution.

(3) I, IV (Funkhouser)

108b—PRINCIPLES OF ZOOLOGY. A continuation of 108a. The second quarter is devoted to the study of heredity and eugenics.

(3) II, IV (Funkhouser)

109—ANIMAL ECOLOGY AND FIELD BIOLOGY. Habits, life histories, food, respiration and other adaptations of animals to the environments in which they live. Study of representative habitats, communities, etc.

Prerequisites: Zoology 1a, b, c or equivalent.

(3) I (Allen)

110a-f—INDEPENDENT WORK. Special problems for individual students who are capable of pursuing independent investigations.

(4) I, II, III (Staff)

112—ICHTHYOLOGY. (1) Taxonomy of the fishes. Use of keys and literature. Drawing types of families. (2) Life histories and

biology of many type species, illustrated by photographs. (3) Fish structure and physiology. (4) Fish culture and economic ichthyology; care of fishes, aquaria, etc. (5) Special studies, such as blind fishes, deep sea fishes, etc.

Prerequisites: Zoology 1a, b, c.

(4) II (Allen)

114a-d—ZOOLOGICAL SEMINAR. (1) Occasional presentation of the result of research by members. (2) Reports on papers of technical or semi-technical nature in the current literature. (3) Occasional book reviews. (4) Discussion of biological principles and phenomena. (5) Correlation of zoological fields.

(1) I, II, III (Staff)

157a—INVERTEBRATE ANATOMY. Lower Invertebrates.

(1) Systematic consideration of lower phyla, classes, orders and a few families. (2) Dissection of a few types not previously studied. (3) Identification and drawings of external aspects of many genera. (4) Life histories.

Prerequisites: Zoology 1a, b, c.

(3) I (Allen and Lincicome)

157b—INVERTEBRATE ANATOMY. The higher phyla. Continuation of 157a.

Prerequisites: Zoology 1a, b, c.

(3) II (Allen and Lincicome)

157c—VERTEBRATE ANATOMY. (1) Systematic consideration of classes, orders, and some families of Vertebrata. (2) Detailed dissection of types not previously studied. (3) Comparative organology and (briefly) physiology of the several classes. (4) Preparation of charts and diagrams of nervous systems, urinogenital systems, and vascular systems. (5) Complete demonstration of the mammalian anatomy.

(6) III (Allen)

166—PHYSIOLOGY OF DEVELOPMENT. A review of theories of differentiation and a consideration of the genetic, environmental, and correlative physiological factors in differentiation. Lectures, assigned readings and literature reports.

Prerequisites: Zool. 1a, b, c; 7a, b, c, or 106.

(3) I (Brauer)

168—BIOLOGY OF SEX. The cytological, genetic, and physiological problems of sexual differentiation. Such cases as hermaphroditism, gynandromorphism, intersexuality, and reversals are considered. Lectures, literature reports, assigned readings.

Prerequisites: Zool. 1a, b, c; Zool. 7a, b, c, or 106.

(3) II (Brauer)

210a, b, c—ZOOLOGICAL PROBLEMS (Research).

Prerequisites: Courses required as undergraduate major, or their equivalent.

(4) I, II, III (Staff)

IV PHYSICAL SCIENCES

CHEMISTRY

Work leading to the master's degree and 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, thirty-six quarter 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—ADVANCED INORGANIC CHEMISTRY. A systematic course in inorganic chemistry with especial emphasis upon the periodic classification, valence, recent developments in this field, the various types of inorganic compounds, their preparation and reactions. General prerequisites must include acceptable courses in quantitative analysis and organic chemistry. Three lectures and recitations per week.

(3) I, III (Leader)

110b—ADVANCED INORGANIC CHEMISTRY. A continuation of Chemistry 110a. Three lectures and recitations per week.

Prerequisite: Chemistry 110a.

(3) II, IV (Leader)

111—LABORATORY WORK IN INORGANIC CHEMISTRY. Laboratory experiments will be chosen to illustrate (a) *Inorganic Preparations*: Methods of preparation of pure samples of the different classes of inorganic compounds. (b) *Techniques*: The study of newer and more difficult techniques in the field of inorganic synthesis. The use of liquefied gases, low and high temperature apparatus, high pressure and high vacua apparatus, etc. (c) *Less Common Elements*: The preparation of pure compounds of the less familiar elements using in most cases ores or industrial concentrates as starting materials. Six hours of laboratory.

Prerequisite: Chemistry 110a or concurrent registration in Chemistry 110a.

(2) II (Leader)

114—NON-AQUEOUS SOLUTIONS. A study of inorganic reactions in non-aqueous solutions. Lectures, three hours.

Prerequisite: Chemistry 140c.

(3)

115a—NUCLEAR CHEMISTRY. The chemistry of the radio elements and other substances involved in nuclear reactions. Lectures, three hours.

Prerequisite: Chemistry 140c.

(3)

115b—NUCLEAR CHEMISTRY. A continuation of 115a. Lectures, three hours.

Prerequisite: Chemistry 115a.

(3)

120—ADVANCED QUALITATIVE ANALYSIS. A more comprehensive course in qualitative analysis than Chemistry 20. The course will include the separation and detection of the less common elements, and will employ a more rigorous physicochemical approach to the theory of separation. Three hours of lecture; six hours of laboratory.

Prerequisite: Chemistry 140c.

(5) III (Watters)

121—SEMIMICRO QUANTITATIVE ANALYSIS. A laboratory course devoted to the quantitative analysis of both organic and inorganic substances by the use of semimicro techniques. One hour of lecture; nine hours of laboratory.

Prerequisite: Chemistry 21b.

(4) (Watters)

122—INSTRUMENTAL ANALYSIS. The applications of microscopic, spectrophotometric, polarographic, and electrometric methods. Lecture and recitation, two hours; laboratory, six hours.

Prerequisite: Chemistry 21c.

(4) I (Watters)

125—ADVANCED QUANTITATIVE ANALYSIS. The complete analysis of a silicate mineral or ore, and the alloys of iron, copper, and aluminum. Lectures, two hours; laboratory, nine hours.

Prerequisite: Chemistry 21c.

(3)

126—INDUSTRIAL ANALYSIS. The use of special industrial control methods for the analysis of water, coal, petroleum, fuel gases and atmospheric constituents. Lecture, one hour; laboratory, six hours.

Prerequisite: Chemistry 21b.

(3)

127—MICROSCOPIC ANALYSIS. Qualitative and semi-quantitative analysis of microgram amounts of various cation groups in a single drop under a microscope. Lecture, one hour; laboratory, six hours.

Prerequisite: Chemistry 20.

(3) (Watters)

129a—SELECTED PROBLEMS IN QUANTITATIVE ANALYSIS. Laboratory, nine hours. Offered upon request.

Prerequisite: Chemistry 20.

(3) (Stewart, Watters)

129b—SELECTED PROBLEMS IN QUANTITATIVE ANALYSIS. A continuation of 129a. Laboratory, six hours.

Prerequisite: Chemistry 129a.

(2) (Stewart, Watters)

130a—ORGANIC CHEMISTRY. Recitations and lectures in the aliphatic series together with laboratory work on the preparation and study of such compounds as will emphasize basic principles and important synthetic methods.

Prerequisite: Chemistry 1b or 2b. (5) I (Barkenbus)

130b—ORGANIC CHEMISTRY. A continuation of Chemistry 130a.

Prerequisite: Chemistry 130a. (5) II (Barkenbus)

130c—ORGANIC CHEMISTRY. A continuation of Chemistry 130b.

Prerequisite: Chemistry 130b. (5) III (Barkenbus)

133—QUALITATIVE ORGANIC ANALYSIS. A systematic study of the separation and identification of organic compounds. Lecture, one hour; laboratory, six hours.

Prerequisite: Chemistry 130c. (4) I, III (Estes)

136a—SYNTHETIC ORGANIC CHEMISTRY. A laboratory course which includes the preparation of compounds of theoretical, biological, and industrial importance together with references to the original literature, conferences and reports.

Prerequisite: Chemistry 130c. (2) I, II, III (Barkenbus)

136b—SYNTHETIC ORGANIC CHEMISTRY. A continuation of Chemistry 136a.

Prerequisite: Chemistry 136a. (3) I, II, III (Barkenbus)

140a—PHYSICAL CHEMISTRY. The fundamental principles of physical chemistry are studied with emphasis upon the application of these in the correlation of natural phenomena. Lectures and recitations, three hours.

Prerequisites: Chemistry 21b; Mathematics 20b; Physics 3c. (3) I, IV (Dawson)

140b—PHYSICAL CHEMISTRY. A continuation of Chemistry 140a. Lectures and recitations, three hours.

Prerequisite: Chemistry 140a. (3) II (Dawson)

140c—PHYSICAL CHEMISTRY. A continuation of Chemistry 140b. Lectures and recitations, three hours.

Prerequisite: Chemistry 140b. (3) III (Dawson)

141—INTERMEDIATE PHYSICAL CHEMISTRY. Principles and applications of chemical thermodynamics. Lectures and recitations three hours.

Prerequisite: Chemistry 140c. (4) I, IV (Dawson)

143a—PHYSICAL CHEMISTRY. For students in agriculture and biological sciences. Lecture, three hours; laboratory, three hours.

Prerequisites: Chemistry 21b and 37; (4) II (Holley)
Physics 1c; Mathematics 17.

143b—PHYSICAL CHEMISTRY. A continuation of Chemistry 143a. Lectures, three hours; laboratory, three hours.

Prerequisite: Chemistry 143a. (4) III (Holley)

144a—PHYSICAL CHEMISTRY. Laboratory studies in physical chemistry to accompany 140a. Laboratory, six hours.

Prerequisite: Chemistry 140a or concurrent. (2) I, IV (Holley)

144b—PHYSICAL CHEMISTRY. A continuation of Chemistry 144a. Laboratory, six hours.

Prerequisite: Chemistry 144a. (2) II (Holley)

144c—PHYSICAL CHEMISTRY. A continuation of Chemistry 144b. Laboratory, six hours.

Prerequisite: Chemistry 144b. (2) III (Holley)

145—COLLOID CHEMISTRY. Lectures, recitations, and assigned readings on the chemistry of colloids. Lectures and recitations, three hours.

Prerequisite: Chemistry 140c. (3) III (Holley)

150a—PHYSIOLOGICAL CHEMISTRY. The chemistry of the metabolism of carbohydrates, proteins, and fats. A study of the tissues, the secretions and excretions. The nature and action of enzymes. Nutrition, food values and requirements. The effect of a diet of selected food principles on the quantity of metabolic products.

Prerequisites: Chemistry 21b and 130c. (4) I (Barkenbus)

150b—PHYSIOLOGICAL CHEMISTRY. A continuation of 150a.

Prerequisite: Chemistry 150a. (4) II (Barkenbus)

150c—PHYSIOLOGICAL CHEMISTRY. A continuation of 150b.

Prerequisite: Chemistry 150b. (4) III (Barkenbus)

160—INDUSTRIAL CHEMISTRY. A survey course on modern industrial chemistry, using the chemical literature and a text as a basis for discussion. Lectures and recitations, three hours.

Prerequisite: Chemistry 140c. (3) I (Meadow)

161—INDUSTRIAL CHEMICAL CALCULATIONS. Lectures and recitations, four hours.

Prerequisite: Chemistry 140c. (4) II (Meadow)

181—CHEMICAL LITERATURE. Conferences and reports on chemical literature and training in the use of literature for research purposes.

Prerequisite: Chemistry 140c.

(1) I (Stewart)

210—SELECTED TOPICS IN INORGANIC CHEMISTRY. Some topics are: the chemistry of the rare earth elements; radio-chemistry; the chemistry of the less common elements, etc. (3) III (Leader)

220—THE CHEMICAL POLARIZING MICROSCOPE. The theory and practice in the use of the polarizing microscope as a means of identifying crystalline chemical substances. Lecture, one hour; laboratory, six hours.

Prerequisites: Chemistry 122 and Chemistry 140c.

(3)

221—QUANTITATIVE MICROANALYSIS. The quantitative analysis of organic and inorganic substances in the microgram and submicrogram range. Lecture, one hour; laboratory, nine hours.

Prerequisite: Chemistry 21c.

(4)

222—ELECTROMETRIC ANALYSIS. The theory and application of potentiometric, polarographic, and conductometric measurements. Lectures, two hours; laboratory, six hours.

Prerequisites: Chemistry 122 and Chemistry 140c.

(4)

230a—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. Lectures, three hours.

Prerequisite: Chemistry 130c.

(3)

230b—SYNTHESIS OF ORGANIC COMPOUNDS. A continuation of 230a.

Prerequisite: Chemistry 230a.

(3)

232—STEREoisomerism OF CARBON COMPOUNDS. Optical isomerism of compounds containing asymmetric carbon atoms; polarimetry; optical isomerism of compounds containing no individual asymmetric atoms; stereochemistry of biphenyls and related compounds; cis-trans isomerism; and stereochemistry of the sugars. Lectures, three hours.

Prerequisite: Chemistry 130c.

(3) I (Estes)

234a—THE ELECTRONIC THEORY AS APPLIED TO ORGANIC REACTIONS. A study of the modern viewpoints of valence and their applications to the interpretation of organic reactions. Lectures, three hours.

Prerequisite: Chemistry 140c.

(3)

234b—THE ELECTRONIC THEORY AS APPLIED TO ORGANIC REACTIONS. A continuation of 234a.

Prerequisite: Chemistry 234a.

(3)

238a—SURVEY OF ORGANIC CHEMISTRY. A general survey of the field of organic chemistry. Lectures, three hours.
Prerequisite: Chemistry 130c or equivalent. (3) (Barkenbus)

238b—SURVEY OF ORGANIC CHEMISTRY. A continuation of 238a.
Prerequisite: Chemistry 238a. (3) (Bakenbus)

240a—THEORETICAL ELECTROCHEMISTRY. Modern theories of solutions. Electrodynamic phenomena. Polarization. Electrolysis. Equilibrium in solutions of electrolytes. Lectures and recitations, three hours.
Prerequisite: Chemistry 140c. (3) II (Dawson)

240b—APPLIED ELECTROCHEMISTRY. Applications of electrochemical methods in determining the properties of solutions. Primary and secondary cells. Electroplating. Electrometallurgy. Electro-analyses and other industrial processes. Lectures and recitations, three hours.
Prerequisite: Chemistry 240a. (3) III (Dawson)

244—PHASE RULE. Lectures and assigned readings on the theory and application of the phase rule. Lectures, three hours.
Prerequisite: Chemistry 140c. (3)

245—CATALYSIS. Theories of homogeneous and heterogeneous catalysis and applications in chemical processes. Lectures, three hours.
Prerequisite: Chemistry 140c. (3)

246—CHEMICAL KINETICS. Studies of chemical reactions from the standpoint of velocity and mechanism. Lectures, three hours.
Prerequisite: Chemistry 140c. (3)

248a—CHEMICAL PRINCIPLES. Lectures, recitations, and problems dealing with the states of matter, properties of solutions, chemical and phase equilibria, chemical kinetics and the elements of thermodynamics and electrochemistry. Lectures, three hours.
Prerequisites: College physics, integral calculus, (3) (Dawson) and one course in physical chemistry.

248b—CHEMICAL PRINCIPLES. A continuation of 248a.
Prerequisite: Chemistry 248a. (3) (Dawson)

249a—TOPICS IN PHYSICAL CHEMISTRY. Selected topics which may include photochemistry, structure of crystals, molecular spectra, nature of the chemical bond, and other recent advances in the field of physical chemistry. Lectures, three hours.
Prerequisites: Chemistry 140c and Mathematics 105. (3)

249b—TOPICS IN PHYSICAL CHEMISTRY. A continuation of 249a.

Prerequisites: Chemistry 140c and Mathematics 105. (3)

282a—THE CHEMISTRY OF THE ANTHOCYANINS, FLAVONES, AND RELATED PIGMENTS. Lectures and assigned readings on the chemistry of the anthocyanins, flavones, porphyrins and related pigments found in organic chemistry. Lectures, three hours.

Prerequisites: Three quarters in organic chemistry. (3) II

282b—THE CHEMISTRY OF THE ANTHOCYANINS, FLAVONES, AND RELATED PIGMENTS. A continuation of 282a. Topics studied in the two courses are not interdependent, so that 282a is not a prerequisite. Lectures three hours.

Prerequisites: Three quarters in organic chemistry. (3) III

288a-f—GRADUATE SEMINAR. Reports and discussions on recent research and current literature. Required of all graduate students.

(1) I, II, III (Staff)

290a-h—RESEARCH IN CHEMISTRY. Work may be taken in the following fields, subject to the approval of the Departmental Graduate Committee: Analytical chemistry, industrial chemistry, inorganic chemistry, organic chemistry, physical chemistry, and plant chemistry.

(5) I, II, III, IV (Staff)

GEOGRAPHY

101—GEOGRAPHY OF NORTH AMERICA. An advanced analysis of the continent based upon the natural features of the environment leading toward a rationalistic development of geographic regions and human adjustments. This study is based upon the areas of Anglo-America.

(4) I, IV (Hutter)

102—GEOGRAPHY OF LATIN AMERICA. An advanced study of the adjustments the peoples and countries have made to their natural environment both local and global.

(4) II, IV (Schwendeman)

104—GEOGRAPHY OF EUROPE AND AFRICA. A study of the intra-national reorganization of the countries of Europe based upon natural environmental criteria and of the national imperialistic ventures which led to the partitioning of Africa. The internal and extra-territorial problems of each of the countries related to their geographic environment.

(4) I, IV (odd years) (Tuthill)

106—GEOGRAPHY OF ASIA. A study of the geographic regions of the major countries and political divisions of Asia, including the U. S. S. R. and the internal and external problems which are affected by factors of the natural environment.

(4) II, IV (even years) Tuthill

108—GEOGRAPHY OF OCEANIA. A study of the South Pacific political divisions; their environmental and resource structure, their geographical problems, and their international relationships.

(4) III (Tuthill)

120—GEOGRAPHY OF KENTUCKY. A study of the geographical position of the state; the physical factors of the environment; the industrial and human adjustments to the natural resources; and the national and world relations affecting the people of Kentucky.

(4) III, IV (Hutter)

130—REGIONAL FIELD OBSERVATION. Observation of cultural features revealing distinctive regional adjustments to the natural environment; an extended field trip covering several regions is required with preliminary study of the regions and written report of field observation. Prerequisite: 8 quarter hours in elements and regional geography or by special permission. Prerequisite for graduate credit: 4 quarter hours in Elements, Economic or Regional Geography, or by special permission. (See individual courses for exceptions.)

(4) IV (Schwendeman)

GEOLOGY

101a—PALEONTOLOGY. A study of fossil invertebrates, their nature, classification, and geological distribution.

Prerequisites: Geology 30a, b, c; and General

Zoology or background in Zoology.

(4) I (McFarlan)

101b—PALEONTOLOGY. A continuation of 101a.

Prerequisite: Geology 101a.

(4) II (McFarlan)

101c—PALEONTOLOGY. The study of geological faunas and the determination of their age. One lecture, three laboratory periods a week.

Prerequisite: Geology 101b.

(4) III (McFarlan)

105a-f—INDEPENDENT WORK IN GEOLOGY. Directed work in independent investigations. Thesis required.

(4 each)

106a—ECONOMIC GEOLOGY. Non-metallic mineral deposits. A study of the distribution, mode of occurrence, origin, methods of

search for, and uses of deposits of economic importance. Three lectures, one laboratory conference per week.

Prerequisites: Geology 30a, b, c; Geol. 123a, b. (4) III (Brown)

106b—ECONOMIC GEOLOGY. Metallic mineral deposits. Same as above but dealing with metalliferous deposits. The economics of various metal industries and methods of treatment of ores will be briefly considered. Three lectures, one laboratory conference per week.

Prerequisites: Geology 30a, b, c; Geol. 123a, b. (4) III (Nelson)

106c—ECONOMIC GEOLOGY. Engineering aspects and groundwater. Professional training in the work of the geologic consultant and staff geologist in engineering work. Exploratory work for industrial and farm groundwater supplies.

Prerequisites: Geology 30a, b, c and 123a, b. (4) (Hamilton)

107a-i—ADVANCED FIELD GEOLOGY. A field course in geologic mapping involving problems of local structure and stratigraphy. Six hours a week in the field.

Prerequisites: Geol. 10a, b, c. (3) I, II, III (McFarlan)

118a-d—FIELD WORK IN REGIONAL GEOLOGY. Six weeks in the field in selected areas, in a study of the regional geology features. The course is an effort to bring the student into contact with diverse geological phenomena and problems. Practice in geological field methods. Required for major students at the end of their junior year.

Prerequisites: Geology 30a, b, c. (6) first term summer school (McFarlan and Nelson)

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. *No prerequisite.* (4) IV (McFarlan)

120b—GEOLOGY OF KENTUCKY. The mineral resources of the state, their distribution, origin, and uses. Fossil record. *No prerequisite.* (4) IV (McFarlan)

122—PETROLEUM GEOLOGY. The origin and accumulation of petroleum and natural gas. A study of geological methods used in exploratory work and in the development of known fields. Geology of the principal producing fields. Three lectures and one laboratory period per week.

Prerequisites: Geology 30a, b, c;
General Elementary Physics. (4) III (MacQuown)

123a—MINERALOGY. A study of geometrical crystallography and other physical properties useful in mineral identification. Two lectures and four hours laboratory per week.

Prerequisites: Geol. 30a, b, c; and

Chem. 1a, b, or a background in Chemistry.

(4) I (Nelson)

123b—MINERALOGY. The determination of minerals by physical properties, blowpipe analysis, and the petrographic microscope. Includes a study of the origin, occurrence, and associations of these minerals. One lecture, six hours' laboratory per week.

Prerequisite: Geol. 123a.

(4) II (Nelson)

124a, b, c—REGIONAL GEOLOGY. A study of the geological regions of the United States.

Prerequisites: Geol. 30a, b, c;

Geol. 31a, b.

(4) I, II, III

125—METHODS OF SUBSURFACE CORRELATION. Methods of, and practice in subsurface stratigraphic work in petroleum geology.

Prerequisites: Geol. 122, 123a, b.

(4) II (Freeman)

126a, b, c—SEMINAR.

(1)

208—STRUCTURAL GEOLOGY. A study of the structural features of the earth's crust with an analysis of the mechanics involved in the production of such structures. Four lectures and recitations or three lectures and one laboratory per week.

Prerequisites: Physics 1a, b, c; Geol. 30a, b, c;

Geol. 124a, b, c.

(4) (Nelson)

210a—STRATIGRAPHIC PALEONTOLOGY. The succession of Paleozoic faunas and their use for stratigraphic correlations. One lecture, three laboratory periods per week.

Prerequisites: Geol. 30a, b, c; Geol. 31a, b;

Geol. 101a, b, c.

(3) I (McFarlan)

210b—STRATIGRAPHIC PALEONTOLOGY. A continuation of 210a. One lecture, three laboratory periods per week.

(3) II (McFarlan)

210c—STRATIGRAPHIC PALEONTOLOGY. A continuation of 210b dealing with Mesozoic and Cenozoic faunas. One lecture, three laboratory periods per week.

(3) III (McFarlan)

212a—OPTICAL MINERALOGY. A study of the optical properties of minerals in thin sections by means of the petrographic microscope. One lecture and three laboratory periods per week.

Prerequisites: Geol. 123a, b;

Physics 1a, b, c.

(4) (Nelson)

212b—SEDIMENTARY PETROLOGY. A study of sedimentary rocks based on microscopical analysis. One lecture and three laboratory periods per week.

Prerequisite: Geol. 212a.

(4)

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 and 3 laboratory periods per week.

Prerequisite: Geol. 212a.

(4) (Brown)

217a-f—SEMINAR.

(1) I, II, III

MATHEMATICS AND ASTRONOMY

Graduate students will be able to obtain sufficient work to qualify for the doctor's degree. Eighteen quarter hours beyond calculus are required before counting work toward an advanced degree.

102—VECTOR ANALYSIS. An elementary course in the algebra and calculus of vectors with numerous applications in geometry and physics.

Prerequisite: Course 20b.

(4) III (Goffman)

103—THEORY OF EQUATIONS. This course is based on Dickson's First Course in the Theory of Equations, which is used as a text.

Prerequisite: Course 20a.

(4) IV (Downing)

104—ADVANCED ANALYTICS. This course is designed to present the extended theory connected with conic sections and to serve as an introduction to a later course in the general theory of algebraic curves.

(4) I (Brown)

105a—DIFFERENTIAL EQUATIONS. A first course in differential equations.

Prerequisite: Course 20b.

(4) I, III (Senior Staff)

105b—DIFFERENTIAL EQUATIONS. Continuation of 105a with emphasis on partial differential equations, with applications.

Prerequisite: Math. 105a.

(4) III (Grau)

106a—ADVANCED CALCULUS. Limits and infinite series. Continuous functions. Definite integral and derivative. Application to power series and Fourier series.

Prerequisite: Course 20b.

(4) I, (Cohen)

106b—ADVANCED CALCULUS. Continuation of 106a. Functions of several variables. Partial differentiation. Multiple integrals. Green's Theorem. Maxima and Minima.

Prerequisite: Math. 106a or

(4) II Cohen

consent of instructor.

107—PROJECTIVE GEOMETRY. A brief course in synthetic projective geometry.

Prerequisite: Course 20a.

(4) II (Pence)

110a-f—INDEPENDENT WORK IN MATHEMATICS. Limited to upper division and graduate students of high standing.

Prerequisite: Course 20b.

(4) I, II, III, IV (Senior Staff)

112—SERIES. The theory of convergence for sequences and infinite series. Uniform convergence. Application to power series, and Fourier series. Multiplication of series. Introduction to summation of divergence series.

(4) II (Brown)

113—FOURIER SERIES AND SPHERICAL HARMONICS.

(4) III (Downing)

116—ANALYTIC MECHANICS. Composition and resolution of forces; statics of a particle; moments; couples; center of gravity; friction; simple harmonic motion; constrainer motion work and energy; inertia.

Prerequisite: Course 20b.

(4) III (Downing)

118—SOLID ANALYTICS. Loci of Equations of first and second degree in three variables. Determinants and matrices. Methods and principles of use in various fields of higher mathematics.

Prerequisite: Course 20b.

(4) IV (Brown)

119—MODERN GEOMETRY. This course covers the ground substantially as presented in Altschiller's text beginning with nine point circle.

Prerequisite: Course 20a.

(4) IV (Pence)

120—MATHEMATICAL STATISTICS. Topics considered: Averages, coefficient of dispersion and skewness, graphical representation, Bernolli's theorem, curve fitting, theory of sampling, correlation, and regression lines.

Prerequisite: Course 20a.

(4) I (South)

122—ACTUARIAL MATHEMATICS. Theory and construction of mortality tables, life annuities, premiums, terminal venues, etc.

Prerequisites: Math. 14 and 20a.

(4) II (South)

124—ELEMENTARY THEORY OF STATISTICS. This course is designed for students, not specializing in mathematics. The content is similar to that of Course 24 except that extra work will be required for graduate credit. Credit not given for both 24 and 124.

(3) II (South)

132—THE CALCULUS OF FINITE DIFFERENCES. A study of the methods of differencing, finite intergration, interpolation, summation of series and difference equations. Topics will include

Gregory-Newton formula for interpolation, divided differences, central differences, Euler-Maclaurin formula, Gregory's formula of numerical integration, Lubback and Woolhouse formulas.

Prerequisite: Course 20a.

(4) III (South)

203a-b—THESIS. Required in addition to other requirements for the advanced degree.

(4) I, II, III, IV (Senior Staff)

204—CALCULUS OF VARIATIONS. Examples illustrating the various types of problems. The differential equation of a curve which minimizes a definite integral. Other properties of a minimizing arc as deduced by Legendre, Weierstrass and Jacobi, Isoperimetric problems.

Prerequisites: Courses 105a, 106a.

(4) II (Goffman)

207a—THEORY OF NUMBERS. This course covers the material in Chapters 1, 2, 3, of MacDuffee's "An Introduction to Abstract Algebra", with supplementary reading.

(4) I

207b—THEORY OF NUMBERS. This course covers the material in Chapters 4, 5, 6, MacDuffee's "An Introduction to Abstract Algebra", with supplementary reading.

(4) II

207c—THEORY OF NUMBERS. This course covers the material in Chapters 7, 8 of MacDuffee's "An Introduction to Abstract Algebra", with supplementary reading.

(4) III

208—THEORY OF FUNCTIONS OF A REAL VARIABLE. Theory of the real number systems. Elements of point-set theories; measure of sets, and the Riemann and Lebesgue theories of integration.

Prerequisites: Math. 105a, 106a.

(4) III

209—THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Introduction to the algebra and calculus of complex numbers and their geometric representation. Conformal transformation. Theory presented mainly from the Cauchy-Riemann view-point, with reference to the Weierstrass development. Introduction to Riemann surfaces.

(4) I (Grau)

211—HIGHER ALGEBRA. This course covers the material in Chapters 2-11 inclusive and Chapter XX in Bocher's *Introduction to Higher Algebra*.

Prerequisite: Course 20a.

(4) IV

220a-d—MATHEMATICS SEMINAR.

(3 each) II

NOTE:—Other courses such as Axiomatics, Algebraic Numbers, Tensor Analysis, Orthogonal Systems Functions, Practical Astronomy, Elementary Observations in Astronomy, Integral Equations,

Differential Geometry, Algebraic Curves, Modern Solid Geometry, Algebraic Invariants, Groups, Curve Tracing, Geometric Transformations, and second courses in various subjects will be given from time to time.

224—BOUNDARY VALUE PROBLEMS. Solution of the principal boundary value problems of physics. Expansion theory. Connections with integral equations and the calculus of variation.
Prerequisites: Math. C105a and Math. 106a, b.

(4) IV (Goffman)

251a—CELESTIAL MECHANICS. Topics included: Keeli linear motion, central forces of various types; potential and attraction of bodies; problem of two bodies; Ivory's theorem; Kepler's equation.
(4) I (Downing)

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. This course begins with a careful statement of the fundamental laws of mechanics and the conditions under which they hold. Defined quantities are introduced logically. The work is usually based on some standard text but will be supplemented by lectures. The student is expected to solve a representative list of problems.

*Prerequisites: Physics 3b, and 3c,
Mathematics 20b.*

(6) (Crawley)

108—THEORY OF LIGHT. This course is designed to provide a foundation for the study of the nature of light and optical phenomena. Six topics are treated: wave motion, Maxwell's definition of physical optics, geometrical optics, interference, diffraction, and optical instruments.

*Prerequisites: Physics 3b and 3c,
Mathematics 20b.*

(5) (Crawley)

110—SPECTROSCOPY. This course considers the production, recording and interpretation of spectra, both atomic and molecular. Bohr-Sommerfeld theory, energy levels, normal and excited states, absorption and Raman spectra. The laboratory will emphasize those principles and techniques which are fundamental in spectroscopy; the general principles of spectroscopic apparatus, theory and use of prism and grating spectrographs, light sources, photographic procedures, wavelength and density determinations, spectrophotometer and densitometer, qualitative and quantitative spectrum analysis.

*Prerequisites: Physics 3b and 3c,
Mathematics 20b.*

(5) (Koppius and
Crawley)

111—ELECTRICITY AND MAGNETISM. A study of the fundamental theory of electricity and magnetism, dealing with electrons. The physical concepts of electrical quantities are emphasized and systems of units defined. The course covers electrostatic forces and energy, conductors and dielectrics, electrolysis, thermoelectricity, magnetic forces and energy of currents, magnetization of iron, transient and alternating currents, and Maxwell's waves.

Prerequisites: Physics 3b, and 3c, Mathematics 20b.

(5) (Crawley)

113—FUNDAMENTALS OF RADIO. A course in radio primarily for high school teachers. The fundamental principles of vacuum tube characteristics, amplifiers, oscillators, transmitters and receivers; laboratory work in constructing and operating simple radio equipment of a type suitable for radio club projects.

Prerequisite: Physics 1c or equivalent.

(4) (Crawley)

114—VACUUM TUBES AND CIRCUIT THEORY. The theory of vacuum tubes and the measurement of their characteristics; amplifiers and oscillators; piezoelectric phenomena; radiation and propagation of high frequency electric waves; measurement of circuit constants, etc.

Prerequisites: Physics 3b and 3c, Mathematics 20b.

(4)

116a—PHYSICAL MANIPULATIONS. A course for those who wish to acquire a technique in various physical manipulations, as for example, glass blowing, and the preparation and use of materials used in physical experiments.

Prerequisites: College Physics or College Chemistry.

(2) (Webb,
Koppius, Schneider)

116b—PHYSICAL MANIPULATIONS. A continuation of 116a

(2) (Webb, Koppius, Schneider)

117—THEORY OF HEAT. A lecture and problem course dealing with the fundamental principles of heat phenomena. Topics included are: high and low temperatures, elementary kinetic theory, specific heat relations both classical and modern, expansion, conduction, radiation, temperature dependence of physical quantities such as viscosity, surface tension, elasticity, etc.

Prerequisites: Physics 3b and 3c,

Mathematics 20b.

(3) (Koppius)

119—PRINCIPLES OF X-RAYS. A basic course in x-rays for the advanced undergraduate and graduate, dealing with the production and properties of x-rays, the mathematical development of the formulae of absorption, scattering, polarization, etc.; methods of

wave length measurement; the Compton effect and related quantum phenomena; a review of articles in the various scientific periodicals.

*Prerequisites: Physics 3b and 3c,
Mathematics 20b.*

(4) (Pardue)

120—X-RAY TECHNIQUE. An introductory course in x-ray technology dealing with the design and operation of x-ray equipment, the use of intensifying screens, dark-room procedure, etc. Some practice will be given in the radiography of the extremities and teeth with special attention to voltage, current, time and distance factors. Lectures and recitations two hours a week. Laboratory two hours.

Prerequisite: Physics 1b and 1c.

(3) (Crawley)

122—X-RAY ANALYSIS OF CRYSTALS. Elementary theory of x-ray diffraction and its application to the study of the structure of matter; the methods of Laue, Bragg, crystal rotation and powder spectroscopy, as used in the determination of symmetry, cell size and atomic arrangement.

Prerequisite: Physics 119.

(4)

123a—PRINCIPLES OF THERMODYNAMICS. A lecture and problem course covering the first and second laws of thermodynamics. Derivation of thermodynamic relations and their application to processes in physics and allied sciences. Some of the topics considered are: equation of state for ideal and real gases, specific heat relations, continuity and changes of state, vapor and osmotic pressure, thermodynamic functions and thermodynamic equilibrium.

Prerequisite: Physics 117 or equivalent.

(3) (Koppius)

123b—PRINCIPLES OF THERMODYNAMICS. A continuation of Physics 123a. The phase rule and phase equilibria, equilibrium in liquid systems, ionic equilibrium, electromotive force and free energy, the solid state, surface phenomena, radiation, Nernst's heat postulate.

Prerequisite: Physics 123a.

(3) (Koppius)

125a, b, c, d—INDIVIDUAL WORK IN PHYSICS.

(4) (Staff)

131—EXPERIMENTAL PHYSICS: ELECTRICITY. This course provides advance laboratory practice in electrical measurements. It includes calibration and use of the quadrant electrometer, the d'Arsonval galvanometer and the Type K Potentiometer; studies of dielectrics and magnetization of iron; measurements of capacitance, resistance and inductance; charge and mass of electron; and absolute determination of electrical quantities.

Prerequisite: Physics 111 or equivalent.

(3) (Crawley)

(May be taken simultaneously.)

135—EXPERIMENTAL PHYSICS: ATOMICS AND NUCLEONICS. Methods of producing and detecting nuclear particles will be studied. Instruments to be employed in the measurements are ionization chambers, Geiger counters, Cloud chambers, photographic films, mass spectrographs, and Van de Graaff generator. Measurements will be made on half-lives, absorption coefficients, ranges, particle energies. The experiments include methods appropriate to alpha particles, electrons and positrons, photons, neutrons, fission fragments and mesons.

Prerequisite: Physics 155 or equivalent. (3) (Pardue)
(May be taken simultaneously.)

137—EXPERIMENTAL PHYSICS: HEAT. An advanced laboratory course in modern methods of measuring thermal quantities. Opportunity is provided for using the gas thermometer, resistance thermometer, thermopiles, and various types of radiation pyrometers. Construction and calibration of thermocouples. Determination of coefficients of expansion, vapor pressure and densities, viscosity, surface tension, freezing and boiling points, specific and latent heats, ratio of specific heats, heats of combustion, thermal conductivities, radiation constant, etc.

Prerequisite: Physics 117 or equivalent. (3) (Koppius)
(May be taken simultaneously.)

138—EXPERIMENTAL PHYSICS: LIGHT. This course is an advanced laboratory study of lenses, mirrors, prisms, gratings, light sources, filters, apertures, and combinations of these elements in optical systems. The experiments include measurements, with such instruments as the photometer, the spectrometer, the interferometer and the polarimeter, etc.

Prerequisite: Physics 108 or equivalent. (3) (Koppius)
(May be taken simultaneously.)

155—FUNDAMENTAL ATOMIC AND NUCLEAR PHYSICS. This course will stress the fundamental principles of atomic and nuclear theory and practice thereby providing a foundation for students interested either in applied nucleonics or in a broader study of atomic and nuclear physics. Topics: atomic nature of matter, electricity and radiant energy, atomic and molecular structure, general laws of radioactivity, alpha, beta and gamma radiations and their interaction with matter, nuclear structure, artificial transmutation of nuclei, nuclear fission.

Prerequisites: Physics 3b and 3c; (5) (Pardue)
Mathematics 20b.

201—PHYSICAL OPTICS. This course covers in mathematical formulation the theories of interference and diffraction, the theory

of optical instruments, the propagation of light in crystalline media and a comparison of the various theories of light.

Prerequisites: Physics 103, one additional "100" course in Physics, and Mathematics 105a. (4)

204—DYNAMICS OF A PARTICLE, INCLUDING WAVE MOTION. A mathematical presentation of the dynamics of a particle in a conservative medium, and the calculations of the velocity of propagation of various wave forms and their synthesis and analysis by Fourier's theorem. A study of the velocity of propagation as a function of wave length, including a consideration of varying degrees of freedom and boundary conditions.

Prerequisites: Two "100" courses in Physics, and Mathematics 105a. (4) (Webb)

205—KINETIC THEORY OF MATTER. A course of lectures covering the classical kinetic theory of gases, including the theorems of Clausius, Joule, Maxwell and Boltzman. Coefficients of viscosity and slip. Brownian movements and specific heat relations are treated from the kinetic theory standpoint and equations of change of state are developed.

Prerequisites: Two "100" courses in Physics, and Mathematics 105a. (4) (Koppius)

208—ELECTROMAGNETIC MICROWAVES. A review of electro-magnetic wave theory with emphasis on solutions of Maxwell's wave equations and their applications to the modern problem of microwave transmission. Plane, rectangular and cylindrical wave guides are treated, and the special problems of transmission at hyperfrequency are studied. Lectures and assigned problems.

Prerequisites: Math. 105a; and Physics 111, Electrical Engineering 133, or equivalent. (6)

210a—ELECTRODYNAMICS. The mathematical theory of electricity and magnetism, including an analysis of the energy relations between charges and between currents. Numerous problems are solved by introducing boundary conditions in the general solutions of the differential equations. The expressions for retarded potentials and the Maxwell field equations are developed. Vector notation is used throughout.

Prerequisites: Physics 111 and Mathematics 105a. (5)

210b—ELECTRODYNAMICS. A treatment of the subject from the relativity point of view and on the electron theory. The topics treated will be the simultaneous and retarded fields of a point charge, the derivation and solution of the field equations, the dynamical

equation of the electron, radiation from an electron and groups of electrons.

Prerequisites: Physics 111 and (4) (Pardue)
Mathematics 105a.

NOTE.—210a and 210b are independent of each other.

211—MAGNETISM. A study of modern theories of magnetism. Lectures and assigned readings. The course includes a brief review of classical electromagnetic theory and quantum theory, describes experimental methods, and treats the Zeeman Effect, the gyromagnetic effect, diamagnetism, paramagnetism, ferromagnetism and magnetism in alloys.

Prerequisites: Physics 111 and (4)
Mathematics 105a.

212—CONDUCTION OF ELECTRICITY THROUGH GASES. A course of lectures covering the outstanding discoveries connected with the conduction of electricity through gases at low pressures. The subjects of diffusion, ionic mobility, e/m measurements, positive ray analysis, isotopes, photo-electricity, etc., are treated.

Prerequisites: Physics 111 and 104, (4) (Koppius)
and Mathematics 105a.

213—ELECTRO-MAGNETIC THEORY OF LIGHT. A course of lectures covering the classical electro-magnetic theory as applied to the optical phenomena of reflection, refraction and polarization. Both isotropic and non-isotropic media as well as conducting and non-conduction media are treated.

Prerequisites: Physics 103, one additional
"100" course in Physics, and (4)
Mathematics 105a.

215—QUANTUM THEORY. A brief review of the Bohr and Bohr-Sommerfeld theories. The general aspects of wave mechanics, matrix mechanics, uncertainty principle. Application of the above theories to numerous and important problems.

Prerequisites: Physics 217a and (4) (Pardue)
Mathematics 105a.

217a—THEORETICAL PHYSICS. Lectures upon advanced dynamics of particles, rigid bodies, deformable bodies and fluids. Much of the material will follow such standard treatises as Page's or Stater and Frank's "Introduction to Theoretical Physics".

Prerequisites: Two "100" courses in Physics (4) (Pardue)
and Mathematics 105a.

217b—THEORETICAL PHYSICS. A continuation of 217a. Thermodynamics and statistical mechanics, kinetic theory of gases. Electrostatics and magnetostatics. Electric currents.

(4) (Pardue)

217c—THEORETICAL PHYSICS. A continuation of 217b. Electromagnetic theory of Maxwell and as modified by special relativity. Geometrical optics and physical optics. Origin of spectra including the fundamental theory of molecular spectra.

(4) (Pardue)

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 101

(4)

and Mathematics 105a.

220a—SEMINAR. A weekly meeting of the staff and advanced students of the department for presentation and discussion of recent developments in physics as reported in the current literature and of work in progress in the department. Credit is given to those who satisfactorily present papers.

(1) (Staff)

220b-f—SEMINAR. A continuation of 220a. (1) (Staff)

224—X-RAYS AND THEIR APPLICATIONS TO PHYSICAL PROBLEMS. An advanced study of the theories of production, scattering and absorption of x-rays, the interpretation of x-ray spectra, and advanced experimental technique in x-ray measurements. Much of the material will be taken from *X-Rays in Theory and Experiment* by Compton and Allison.

Prerequisite: Physics 119.

(4)

225—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

No credit (Staff)

226a—RESEARCH IN PHYSICS

(4) (Staff)

226b—RESEARCH IN PHYSICS.

(4) (Staff)

227a—RESEARCH IN PHYSICS.

(6) (Staff)

227b—RESEARCH IN PHYSICS.

(6) (Staff)

250a—RELATIVITY. A theory of space and time measurements as applied to physical phenomena.

Prerequisites: Physics 103 and either Physics 111 or 104.

(4) (Webb)

250b—RELATIVITY. A continuation of Physics 250a.

(4) (Webb)

V. AGRICULTURE

AGRICULTURAL EDUCATION (See Education)

AGRICULTURAL ENTOMOLOGY

102—ECONOMIC ENTOMOLOGY. Especially planned for those intending to take up vocational agricultural teaching and county agent work. The life history, control, and means of identification of the common and important economic insects of Kentucky are considered. The making and care of school collections, cages, and aquariums, are described. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite: Agricultural

Entomology 1.

(4) IV (Price or Townsend)

103—ECONOMIC ENTOMOLOGY. Fruit and Garden Insects. Life histories, habits, distribution, and control of insects, injurious to fruit and garden crops, with special attention to those species found in Kentucky. The various diseases, parasites, and predators of these injurious species are also given attention. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite: Agricultural

Entomology 1.

(4) I (Price or Townsend)

104—ECONOMIC ENTOMOLOGY. Farm Crop Insects and Insect Animal Parasites. Life histories, habits, distribution, and control of insects injurious to common farm crops including those of stored grain and forage; also insect parasites of the common farm animals. The various diseases, parasites, and predators of these injurious species are given attention. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite: Agricultural

Entomology 1.

(4) III (Price or Townsend)

105a-d—SYSTEMATIC AND TECHNICAL AGRICULTURAL ENTOMOLOGY. Insect physiology, anatomy, ecology, and taxonomy, entomological literature and technique; studies of special groups of insects. Time to be arranged.

Prerequisites: Agricultural Entomology 1, and any one of the following:

102, 103, 104.

(3) I, II, III, IV (Price or Townsend)

201a-d—ENTOMOLOGICAL PROBLEMS. Investigations of chosen insect problems, including original work. Discussion and assignment of current insect subjects. Time to be arranged.

Prerequisites: Agricultural

Entomology 1, 103, 104, and 105a-d.

(3) I, II, III, IV (Price)

AGRONOMY
COURSES IN CROPS

104—ADVANCED CROPS: FORAGE CROPS. A comprehensive study of forage crops with special emphasis upon their production in Kentucky. Recitations, 4 hours.

Prerequisites: Agr. 1,

Bot. 1b.

(4) I, IV (Alternate Years) (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. Recitations and lectures, 4 hours.

Prerequisites: Agr. 1, Bot. 1b.

(4) II (Kinney)

106—FIELD CROP IMPROVEMENT. A study of the principles involved and the technique used in breeding crop plants. Lectures and recitation, 3 hours

Prerequisites: Agr. 1, A. I. 61.

(3) (Kinney)

200a-c—SEMINAR.

(1) I, II (Agronomy Staff)

204a-b—SPECIAL PROBLEMS IN PRODUCTION OF FORAGE CROPS. Intensive studies of research relative to particular problems in forage crop production.

Prerequisite: Approval by instructor.

(3) III, IV (Fergus)

205a-b—SPECIAL PROBLEMS IN PRODUCTION OF TOBACCO OR CEREALS.

(3) I, II (Kinney)

COURSES IN SOILS

110—SOIL BIOLOGY. A study of soil organisms and biological soil processes in relation to soil productivity. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: Agr. 10; Bact. 52 desirable.

(4) II

112a-b—SPECIAL PROBLEMS IN SOILS. Study of some special phases of soils not covered in other courses. Only three credits may be taken in a term.

Prerequisites: Agr. 10 and approval of instructor.

(3) I, II, III, IV
(Karraker and Ligon)

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.

(4) II (Roberts)

114—ADVANCED SOILS. An advanced study of the physical and chemical properties and processes of soils with applications to soil management. Lectures and recitations, 3 hours.

Prerequisite: Agr. 10.

(3) II (Karraker)

119—SOIL ORIGIN, CLASSIFICATION, AND MAPPING. Factors and processes of soil formation, characteristics and agricultural significance of the great soil groups, classification of soils, and the nature, use, and preparation of soil maps. Lectures and recitations, 3 hours. Laboratory and field work, 7 3-hour periods by appointment. *Prerequisites:* Agr. 10 and approval of instructor. (4) III (Ligon)

200a-c—AGRONOMY SEMINAR.

(1) I, II, III (Agronomy Staff)

212a-d—RESEARCH IN SOILS. Each course offered each quarter, but only three hours may be taken in a quarter.

Prerequisite: Approval of instructors. (3) I, II, III, IV (Karraker and Ligon)

COURSES IN PLANT PATHOLOGY

200a-c—SEMINAR. (1) I, II (Agronomy Staff)

233a-b—LITERATURE OF PLANT PATHOLOGY. A survey of the literature of plant pathology.

Prerequisite: Agr. 23. (4) I, II (Valleau)

FARM ENGINEERING

101a-d—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. *Prerequisites:* F. E. 1 and approval by instructor. (4) I, II, III, IV (Kelley, Young)

102—DAIRYING ENGINEERING. A study of the engineering principles involved in the construction, installation, operation, and management of machinery and equipment used in the handling and manufacturing of dairy products. Lectures and recitations, 3 hours; laboratory, 2 hours. *Prerequisite:* F. E. 1. (4) II (Kelley)

104—RURAL ELECTRIFICATION. This course is designed to give students information on how to obtain electric service and on the problems involved in the selection, operation, and care of electrical equipment in the home and on the farm. Lecture and recitations, 3 hours. (3) II (Kelley)

105—ENGINEERING PRACTICES IN SOIL MANAGEMENT. Surveying, mapping, and determining areas of farm land; designing farm drainage systems; problems in controlling erosion with terraces and other mechanical structures. Lectures, 2 hours; laboratory, 4 hours. (4) III, IV (Kelley)

ANIMAL INDUSTRY
COURSES IN ANIMAL HUSBANDRY

100—ANIMAL BREEDING. Breeding plans, inbreeding, line-breeding, outcrossing; disease resistance; inheritance of lethal characters; genetics of sex, heredity in cattle, sheep, swine, horses and laboratory animals. To be given alternate years. Lectures, 5 hours.
Prerequisite: A. I. 61. (5) II (Steele)

102—ADVANCED LIVESTOCK JUDGING. Primarily for judging team candidates. Open only to those who have made good standings in the prerequisite courses. Lecture and laboratory.
Prerequisites: A. I. 1, 2. (4) I

103—WORK STOCK PRODUCTION. History and importance of the horse and mule industry. Selection, breeding, feeding and management of horses and mules. Lectures, 2 hours; laboratory, 2 hours.
Prerequisites: A. I. 1, 81. (3) II

104—SHEEP PRODUCTION. History and importance of the sheep industry. Selection, breeding, feeding and management of sheep. Production and handling of wool. Lectures, 3 hours; laboratory, 2 hours.
Prerequisite: A. I. 81. (4) III, IV

105—BEEF PRODUCTION. History and importance of the beef cattle industry. Selection, breeding, feeding and management of beef cattle. Lectures, 3 hours; laboratory, 2 hours.
Prerequisites: A. I. 1, 81. (4) III (Garrigus)

106—PORK PRODUCTION. History and importance of the swine industry. Selection, breeding, feeding and management of swine. Lectures, 3 hours; laboratory, 2 hours.
Prerequisites: A. I. 1, 81. (4) I, III (Wilford)

108—MEAT JUDGING. Intensive instruction in the judging of carcasses and cuts of beef, veal, pork and lamb. Laboratory, 2 hours.
Prerequisite: A. I. 6. (1) I (Wilford)

109a-d—SPECIAL PROBLEMS IN ANIMAL HUSBANDRY.
Approval of instructor required
(3) I, II, III, IV (Animal Husbandry Staff)

200a-c—ANIMAL INDUSTRY SEMINAR.
(1) I, II, III (Staff)

201a-d—RESEARCH IN MEATS. Problems involving original investigation.
(3) I, II, III, IV (Wilford)

203a-d—RESEARCH IN HORSE HUSBANDRY. Problems involving original investigation.
(3) I, II, III, IV

204a-d—RESEARCH IN SHEEP HUSBANDRY. Problems involving original investigation.

(3) I, II, III, IV

205a-d—RESEARCH IN BEEF CATTLE HUSBANDRY. Problems involving original investigation.

(3) I, II, III, IV (Garrigus)

206a-d—RESEARCH IN SWINE HUSBANDRY. Problems involving original investigation.

(3) I, II, III, IV (Wilford)

COURSES IN DAIRYING

120—DAIRY CATTLE BREEDING. The application of genetics to present day problems of breed and herd improvement, the progeny testing of sires, type classification, selective registration. The rise and fall in popularity of prominent families and strains within the leading dairy breeds. Lectures, 3 hours; laboratory, 2 hours.
Prerequisite: A. I. 61.

(4) III, IV (Alternate) (Ely)

121—DAIRY CATTLE FEEDING AND MANAGEMENT. The application of the principles of nutrition to dairy cattle feeding; current methods contributing to maximum efficiency in the production of quality dairy products on the farm. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite: A. I. 81.

(4) I, IV (Alternate) (Ely)

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 laboratory.

Prerequisites: A. I. 21, 23.

(2) I (Ely)

124—BUTTER. A study of the various problems and processes involved in the manufacture and storage of butter. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: A. I. 21.

(3) I (Barkman)

125—ICE CREAM. A study of the problems and process involved in the manufacture and handling of ice cream. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: A. I. 21.

(3) II (Barkman)

126—MARKET MILK. A study of the problems connected with the production and handling of market milk. Lectures, 2 hours; laboratory, 3 hours.

Prerequisite: A. I. 21.

(3) III (Morrison)

127—CHEESE. A study of problems and processes involved in manufacture and ripening of cheddar and other common cheeses. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: A. I. 21.

(3) II (Barkman, Morrison)

128—TECHNICAL CONTROL OF DAIRY PRODUCTS. Various chemical and bacteriological tests used in the control of production or processing of dairy products. Laboratory and recitations, 6 hours.
Prerequisites: A. I. 21, 130, 131. (3) III (Morrison)

129a-d—SPECIAL PROBLEMS IN DAIRYING. Approval of instructor required. (3) I, II, III, IV (Dairy Staff)

130—DAIRY BACTERIOLOGY. The application of bacteriological principles to the production and processing of milk and other dairy products, involving entrance of micro-organisms into dairy products, effects of their growth and methods for their control. Lectures, 3 hours.
Prerequisite: Bact. 52 or 102. (3) II (Morrison)

131—DAIRY BACTERIOLOGY LABORATORY. Laboratory practice in bacteriological examination of milk and other dairy products. Laboratory, 6 hours.
Prerequisite or Concurrent: A. I. 130. (3) II (Morrison)

221a-d—RESEARCH IN DAIRYING. Special problems involving original investigation on the part of the student in either dairy production or dairy manufacturing.
(3) I, II, III, IV (Ely, Morrison)

See also A. I. 200, Animal Industry Seminar.

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. To be given in alternate years. Lectures, 4 hours.
Prerequisite: A. I. 61. (4) II (Wightman)

141—ADVANCED POULTRY PRODUCTION. Studies of control measures in poultry diseases, nutrition, marketing, flock management and replacement. Lectures, 3 hours; laboratory and demonstrations, 4 hours.
Prerequisite: A. I. 41. (5) I, IV (Wightman)

142—MARKETING AND PROCESSING POULTRY PRODUCTS. Organization and functioning of markets, methods of selling, prices, and price making forces are combined with laboratory instruction in grading, packaging and handling poultry and eggs according to recognized commercial standards. Lectures, 2 hours; laboratory, 2 hours.

Prerequisites: A. I. 41 and M. & R. F. 100. This is the same course as M. & R. F. 142. (3) II (Roberts and Wightman)

149a-d—SPECIAL PROBLEMS IN POULTRY. Approval of instructor required.

(3) I, II, III, IV (Wightman, Insko)

241a-d—RESEARCH IN POULTRY. Problems involving original investigation.

(3) I, II, III, IV (Wightman, Insko)

See also A. I. 200, Animal Industry Seminar.

COURSES IN GENETICS

161—GENETICS. Lectures of A. I. 61 and assigned readings. Primarily for graduate students.

Prerequisite: At least one course in biology. (4) III, IV (Steele)

162—GENETICS LABORATORY. Similar to A. I. 62 but additional work required. Primarily for graduate students. Laboratory, 2 hours. To be taken concurrently with A. I. 161, at student's option.

(1) I, III, IV (Steele)

163—ADVANCED GENETICS. Concerned chiefly with physical basis of heredity, mutations and chromosomal aberrations, linkage, genetics and development, and reports on current literature. Lectures, 4 hours

Prerequisites: A. I. 61 or 161.

(4) II (Steele)

169a-d—SPECIAL PROBLEMS IN GENETICS. Approval of instructor required.

(3) I, II, III, IV (Steele)

261a-d—RESEARCH IN GENETICS. Problems involving original investigation.

(3) I, II, III, IV (Steele)

See also A. I. 100, Animal Breeding; A. I. 120, Dairy Cattle Breeding; A. I. 140, Poultry Breeding; A. I. 200, Animal Industry Seminar.

COURSES IN ANIMAL NUTRITION

181—ANIMAL NUTRITION. The chemistry and physiology of animal nutrition and nutritive requirements for growth, fattening, reproduction, lactation and other body functions. Lectures, 3 hours.

Prerequisite: Chem. 1a, 1b, 37 or equivalent (4) II (Forbes)

182—LABORATORY METHODS IN ANIMAL NUTRITION. The use of laboratory techniques and equipment in the solution of fundamental problems of nutrition. Laboratory, 4 hours.

Prerequisite or concurrent: A. I. 181.

(3) II (Forbes)

183—ADVANCED ANIMAL NUTRITION. History and development of nutritional theories and techniques; a critical review of current literature. Lectures and recitation, 3 hours.

Prerequisite: A. I. 181.

(3) III (Forbes)

189a-d.—SPECIAL PROBLEMS IN ANIMAL NUTRITION. Approval of instructor required. (3) I, II, III, IV

281a-d.—RESEARCH IN ANIMAL NUTRITION. Problems involving original investigation. (3) I, II, III, IV

ANIMAL PATHOLOGY

101—ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS. Correlation of structure and function of the organs and systems of the animal body; a study of anatomy and physiology as related to work offered in courses in livestock judging, animal nutrition, butchering, animal breeding, infectious diseases and animal hygiene. Lectures, 3 hours; demonstration lecture, 1 hour. (4) I (Hull)

102—INFECTIOUS DISEASES OF DOMESTIC ANIMALS. Distribution, general nature, manner of dissemination, methods of control, prevention and eradication of infectious and parasitic diseases of animals. Lectures, 3 hours; demonstration lecture, 1 hour. *Prerequisite: A. P. 101 or approval by instructor.* (4) II (Dimock)

103—ANIMAL HYGIENE. A consideration of both general and specific measures designed to promote health and prevent disease. Animal Hygiene includes feed and water, housing and ventilation, yards and pastures and sanitation and environment. All are a part of the many problems to be considered in a program of animal health. *Prerequisites: A. P. 101 and 102, or approval by instructor.* (4) III (Hull, Dimock)

104a-c—SPECIAL PROBLEMS IN ANIMAL PATHOLOGY. *Prerequisites: A. P. 101, 102 and 103 or approval by instructor.* (3) I, II, III (Hull, Dimock)

201a-c—INVESTIGATIONS IN ANIMAL DISEASES. This course is open only to persons who have a degree in veterinary medicine. *Prerequisites: A. P. 101, 102, 103 or equivalent.* (3) I, II, III, IV (Hull, Dimock)

ECONOMIC AND SOCIAL ASPECTS OF AGRICULTURE

Courses are offered in the fields of agricultural economics and 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 and 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

101—PRODUCTION ECONOMICS. Considers the economic analyses appropriate to the examination of problems of agricultural production. Includes a study of the costs and return and combination of production elements, the scale of farm organization, enterprise relationships, interregional competition, production control and similar problems dealt with largely from a theoretical point of view. Intended principally for seniors and juniors in the College of Agriculture and Home Economics.

Prerequisites: F. E. 1 and approval of instructor.

(3) I

110—FARM MANAGEMENT. The course consists of a study of the principles underlying the choice of proper types of farming; the comparative merits of intensive and extensive farming; the relation of livestock to farm management; the best size of farm; the relation of capital to farm profits; farm rental systems; the management of men and horse labor and machinery for greatest profits; the layout of fields and farm buildings; farm accounts, including the annual inventory; the choice of a region for farming and important considerations in buying a farm; the other vital questions of farm organization and management.

Prerequisite: Farm Economics 1. (4) I, II, III, IV (Bradford)

111—ADVANCED FARM MANAGEMENT. A course giving advanced consideration to the fundamental principles underlying the choice of a farm, the selection of crop and livestock enterprises, the management of labor and equipment and the organization of these elements into an efficient and profitable farm business. Trips are made to nearby farms that illustrate these principles and study is devoted to the records of other successfully operated farms of the state.

Prerequisite: Farm Economics 110.

(3) I (Nicholls)

112a-c—SPECIAL PROBLEMS IN FARM MANAGEMENT. Students enrolling in this course are assigned some special problem, as for example, the cost of producing some class of farm products such as dairy products, crop or livestock, the problem of profitable farm organization in a specified community; farm taxes, etc. Students are required to review the literature of the problem and report on it regularly to the instructor. In most cases they are also required to examine, classify and tabulate special statistical data previously collected by the College of Agriculture and to relate these data to the problem. Each student presents a final report showing results and conclusions.

(3) I, II, III (Nicholls)

113—TYPES AND SYSTEMS OF FARMING. Included in this course will be a critical study of the business organization and man-

agement of successful Kentucky farms in the several type-of-farming areas of the State. Several field trips will be made to farms whose operators have achieved outstanding financial success while at the same time maintaining or increasing the productivity of their farms. One of these will be a two day trip, the class leaving Friday morning and returning Saturday evening, during which the farms visited will be representative of several of Kentucky's major farming type areas.

Prerequisite: Farm Economics 110.

(3) III (Nicholls)

114a-c—FARM MANAGEMENT FOR A CHANGING AGRICULTURE. An application of the principles of economics to the farm business. The development of organization and management plans using basic resources. Consideration is given to the impact of war and defense programs on farm organizations and management in Kentucky.

(1) IV (Bradford)

115—FARM ACCOUNTING. An application of some of the fundamental principles of accounting to the study of the organization and operation of farms. Lectures, 2 hours; laboratory, 2 hours.

(3) II (Bradford)

120—LAND ECONOMICS. A study of land resources in relation to present and prospective needs. An examination of the economic characteristics of land and of the bases for classifying land will be made. Land income, land value and tenure will be considered in relation to land use and conservation.

*Prerequisite: Farm Economics 1
or consent of instructor*

(3) I

121—LAND USE PLANNING. A study of the national needs and national policies which led to the land-use pattern of 1930; social and economic implications of the destruction and loss of soil resources; contribution and limitations of land use planning toward the development of socially desirable programs for the use of natural resources. Particular attention will be given to the land use problems of the southern United States.

Prerequisite: Farm Economics

(3) II

120 or consent of instructor.

122—LAND VALUE AND APPRAISAL. Consideration will be given to the capitalization process, and other devices for valuing farmland; thoroughgoing study will be made of the appraisal procedures of the Federal Land Banks and of other credit institutions; particular attention will be given to special difficulties which arise in appraising and valuing land in the state of Kentucky and in the southern United States.

Prerequisite: Farm Economics 120

(3) III

or consent of instructor.

123a-c—CURRENT LAND PROBLEMS. A study of the requirements for and the supply of agricultural land in the United States. A consideration of the contribution of land classification and land use planning toward the development of socially desirable policies and programs for using natural resources.

(1)

200a-c—AGRICULTURAL ECONOMICS SEMINAR. Preparation and presentation of papers on current problems in the field of agricultural economics. Round table discussions, centering on the subject matter treated in the various reports, are held at each meeting.

(1) I, II, III (Staff)

201a-c—RESEARCH IN FARM ECONOMICS. Open to graduate students. The student enrolling in this course is assigned 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 problem. The student is required to submit a report embodying his methods, generalizations, and conclusions.

(3) I, II, III, IV (Nicholls and Staff)

202a—ECONOMICS OF PRODUCTION AS APPLIED TO AGRICULTURE. This course places emphasis upon the fundamental considerations essential to the study of production organization in the economy of modern agriculture. Theoretical analysis will be applied to such questions as the combination of the agents of production, scale and intensity of production, comparative advantage of interregional analysis, and to an evaluation of national agricultural policies and programs. Students will be expected to do supervised investigation of specific problems in the field.

Prerequisite: Consent of instructor.

(3) II

202b—ECONOMICS OF PRODUCTION AS APPLIED TO AGRICULTURE. A continuation of 202a.

(3) III

203—COST, PRICE, AND PRODUCTION RELATIONSHIPS IN AGRICULTURE. Consideration is given to the different concepts of cost which are encountered in the agricultural research field, considerable attention is paid the applicability of the traditional cost-price rationale in the agricultural industry. Members of the seminar will be given an opportunity to appraise the advanced non-mathematical literature in this field.

Prerequisite: Consent of instructor.

(3) III

COURSES IN RURAL SOCIOLOGY

110—RURAL SOCIOLOGY. The work in Rural Sociology 10 with additional reading and problem assignments.

Prerequisite: Soc. 1 or Economics 1

(3) I, II, IV (Beers)

120—RURAL LEADERSHIP AND SOCIAL CHANGE. Rural culture and tradition; social processes in rural life, rural-urban relationships; survey of modern and contemporary changes within the rural community vitally affecting farm life; special emphasis upon attitudes, personality, and the relation of leadership to change; leadership problems and methods in agriculture and rural life. Lectures, recitations, and student projects.

Prerequisite: R. S. 10 or 110 or
approval of instructor.

(3) III (Kaufman)

130a-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.

Prerequisite: *Approval of instructor.*

(3) I, II, III (Staff)

140a-c—RURAL LIFE. The responses of rural people and their social organization to current trends in southern states and in the nation. Population, community, rural groups and institutions; rural attitudes.

(1) IV (Beers)

200a-c. RESEARCH IN RURAL SOCIOLOGY. Individual graduate research with correlated study of rural social research types and methods.

Prerequisite: *Introductory*
course in statistics.

(3) I, II, III (Staff)

210—SEMINAR IN RURAL ORGANIZATION. Organizational behavior of farmers; social analysis of farmers' organizations and other rural interest groups, national, state, and local; comparative study of group types; trends affecting the social structure of rural communities; agricultural planning and social planning in rural communities.

Prerequisite: *Approval of instructor.*

(3) I (Beers)

220—SEMINAR IN RURAL SOCIAL ATTITUDES. The nature and genesis of rural attitudes and their relation to rural social control; analysis of contemporary rural attitudes and opinion.

Prerequisite: *Approval of instructor.*

(3) III (Kaufman)

250—TOPICAL SEMINAR. Analysis of topics of scientific interest in rural sociology, selected from such fields as the following: criticism of contemporary research; sociological factors in land use; migration; rural social ecology of the South; highland societies; sociology of rural groups.

(3) II (Beers)

SOCIOLOGY (See Social Science)

MARKETS AND RURAL FINANCE

100—MARKETING. Principles and methods of marketing farm products; methods of marketing at country points and in central

markets; classes and functions of middlemen; marketing specific commodities; market prices; marketing costs; and cooperative marketing. Lectures, 4 hours.

Prerequisite: *Farm Economics* 1. (4) I, III, IV (Brown)

101—COOPERATIVE MARKETING. Principles, methods and problems involved in the cooperative marketing of farm products; legal organization, and management problems which cooperatives encounter for different classes of farm products. Lectures, 3 hours.

Prerequisite: *M. & R. F.* 100. (3) II (Vennes)

102—MARKETING TOBACCO. Principles, methods and problems in marketing tobacco including systems of marketing, organization of auction markets, functional problems of warehouse operations, efficiency in the pricing of tobacco, monopolistic aspects of competition, and international movement of tobacco and tobacco products.

Prerequisite: *M. & R. F.* 100. (2) I (Clark)

103—MARKETING LIVESTOCK. Analysis of local, auction and terminal market organization including marketing agencies, market institutions, marketing services, public regulation, direct marketing, and cooperative organization.

Prerequisite: *M. & R. F.* 100. (2) III (Brown)

104—MARKETING DAIRY PRODUCTS. Economic aspects of markets for the principal dairy products including factors affecting the efficiency of dairy marketing organizations, price policies, quotation systems, cooperative and marketing agreements.

Prerequisite: *M. & R. F.* 100. (2) II (Roberts)

110—AGRICULTURAL PRICES. A study of factors influencing prices of farm products, price trends, cycles, supply-price relationships, the effects of inflation and deflation upon agriculture, price legislation, and the current outlook for individual farm products.

Prerequisite: *Farm Economics* 1. (3) I, IV (Card)

111—MARKET PRICES. A study of price making forces in agricultural markets over relatively short periods of time. Inter-regional and intermarket price relationships; effects of grading, price quoting, methods of sale, extent of competition, speculation, and marketing agreements.

Prerequisite: *Farm Economics* 1, (3) II
M. & R. F. 100.

120—FARM FINANCE. Principles of financing the production and marketing of farm products; credit needs of agriculture, including short-time, intermediate and farm mortgage-credit requirements; organization and operation of the federal farm loan system, and other agencies which furnish credit for agriculture. Lectures, 3 hours.

Prerequisite: *Farm Economics* 1. (3) I (Clark)

130—AGRICULTURAL STATISTICS. A study of the principles and methods involved in the analysis, interpretation, and use of agricultural statistics; time series, tabular relationships, gross correlation; and graphic multiple correlation. Sampling, tests of reliability and significance of statistical measures, and analysis of variance, as used in agricultural research, are studied. (5) I, III (Card)

140—AGRICULTURAL POLICY. General development of the principles underlying agricultural policy, including analysis of the place of agriculture in the general economy, goals or objectives of agricultural policy; causes and development of the present agricultural problem; appraisal of current or proposed programs, and legislation for remedial action.

Prerequisite: Farm Economics 1.

(5) III (Price)

141a-c—CURRENT PROBLEMS IN AGRICULTURAL ECONOMICS. This course emphasizes recent developments in agricultural marketing, production and credit. Especial consideration of federal production adjustment programs, organization of agricultural credit, marketing agreements and cooperation.

Prerequisite: Farm Economics 1.

(1) IV (Price)

142—MARKETING AND PROCESSING POULTRY PRODUCTS. Organization and functioning of markets, methods of selling, prices and price making forces are combined with laboratory instruction in grading, packaging and handling poultry and eggs according to recognized commercial standards. Lectures, 2 hours; Laboratory, 2 hours.

Prerequisites: A. I. 41 and

(3) II

M. & R. F. 100. This is the same course as A. I. 142.

(Roberts-Wightman)

200a-c—SEMINAR. Analysis of current problems in field of marketing and rural finance.

(1) I, II, III (Brown)

202a-c—SPECIAL PROBLEMS IN MARKETING AND RURAL FINANCE. Open to graduate students who have the necessary training and ability to do research on individual problems. The course consists of individual work on some selected problems related to agricultural marketing or agricultural finance.

Prerequisite: Approval of head of department.

(3) I, II, III (Staff)

204—RESEARCH IN MARKETING. Laying out the research Project. Analysis of data.

Prerequisite: M. & R. F. 100.

(3) II (Price)

210—THEORY OF AGRICULTURAL PRICES. The application of economic theory to the field of agricultural prices. Variability and

flexibility in the price structure in terms of price behavior and with respect to some important factors influencing long time, cyclical and seasonal changes in agricultural prices. Attention will be given to the effects of changes in industrial production and consumer incomes, foreign demand, mechanization of agriculture, production cycles, middlemen's margins, etc.

Prerequisite: M. & R. F. 100.

(3) I (Brown)

211—RESEARCH METHODS IN AGRICULTURAL PRICES. This course is primarily a critical and historical study of the application of various methods of analysis to specific types of price problems, including the assembling of data, the theory and practice of sampling, supply-price relationships and methods of testing the results of analysis. Students entering the course should have a broad preparation in general economics, agricultural economics and statistics.

Prerequisite: M. & R. F. 130.

(3) III (Card)

240—EFFECTS OF POLITICAL, ECONOMIC AND CULTURAL FORCES ON RURAL LIFE IN AMERICA. A course for graduate students in the heritages and political and economic forces that have affected the life and the property of the people engaged in agriculture. The period covered is from colonial times to the present. Lectures, readings, and assigned topics, three hours per week.

(3) II (McVey)

HOME ECONOMICS

COURSES IN FOODS AND NUTRITION

101—PRINCIPLES OF NUTRITION. Nutrition functions of food and nutritive requirements of the body are presented for those who wish to know the value to mental and physical efficiency of good food selection. Lectures, 4 hours. Not open for credit to students registered in home economics. (4) III, IV (Erikson)

102—DIETETICS. Daily food requirements at different age levels, emphasis being given to satisfying the divergent needs of families and other groups. Practice is given in normal dietaries. Lectures, 3 hours; laboratory, 6 hours.

Prerequisites: H. E. 6 and 11.

(6) I, II, III, IV (Wooldridge)

103a-b—PUBLIC SCHOOL NUTRITION. Study of the nutrition class movement with emphasis on causes and effects of malnutrition, methods of judging nutrition and height and weight standards. Development of health program in public schools. Lectures, 2 hours.

Prerequisite or parallel: H. E. 102.

(2) I, II, IV (Wooldridge)

103c-d—PUBLIC SCHOOL NUTRITION. Opportunities are given to make and collect illustrative material for courses in applied

nutrition. Observations of nutrition classes, school cafeterias and other nutrition projects are made. Laboratory, 2 hours.

Prerequisite or parallel: (1) I, II, IV (Wooldridge)
H. E. 103a or 103b.

105a-c—EXPERIMENTAL COOKERY. Study of factors that affect the results obtained in cooking and food preparation processes. Experimental work is carried out under controlled conditions and special emphasis is placed on physical, chemical, and mechanical conditions. Lecture, 1 hour; laboratory 6 hours.

Prerequisite: Chem. 37, H. E. 5 or (4) I, II (Wooldridge)
approval of instructor

106a-d—FIELD WORK IN NUTRITION. Nutrition problems at different age levels with emphasis on the child in the public school, correlated with surveys and experimental studies to show the relation between diet selection and its physical and mental effects. Lecture and laboratory.

Prerequisite: H. E. 103a or H. E. 103b, (1) I, II, III, IV
or approval of instructor (Wooldridge)

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. The latest findings in technical information on nutrition are presented. Opportunity is given to collect visual aid material for teaching nutrition.

(5) IV (Erikson)

108a-d.—SEMINAR IN NUTRITION. Investigations of recent research in nutrition.

Prerequisite: Senior or graduate standing. (2) I, II (Erikson)

111—ADVANCED NUTRITION. Human nutrition studies as an application of the principles and methods of the chemistry of nutrition to the characteristic properties of the bodily cell structure and metabolism. Laboratory work includes gastric, blood and urine analyses. Lectures, 2 hours; laboratory, 4 hours.

Prerequisite: H. E. 11 (4) II, IV (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. Practice is given in planning, calculation and preparation of therapeutic diets. Lectures, 2 hours; laboratory, 4 hours.

Prerequisites: H. E. 102, H. E. 111 (4) II, IV (Erikson)
or taken concurrently.

114—FOOD PRESERVATION. The principles of preserving food by drying, canning, pickling, salting, and quick freezing. Prac-

tice in the canning of fruits, vegetables, and meats; and the pickling of fruits and vegetables and making of jellies and preserves.

Prerequisites: Bact. 52 and H. E. 5. (3) IV (Helton)

200a-d—SEMINAR IN NUTRITION. (3) I (Erikson)

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 laboratory.

Prerequisite: H. E. 103, H. E. 106a, (1) I, II, III, IV
or approval of instructor. (Wooldridge)

COURSES IN CLOTHING, TEXTILES, RELATED ART

125—ADVANCED TEXTILES. Individual term problems. Lectures, 3 hours.

Prerequisites: H. E. 25, Econ. 1. (3) I, IV (Alternate)
(Sumner)

126—ADVANCED COSTUME DESIGN. A survey of costume throughout the ages. Planning of modern costumes. Lectures, 2 hours; laboratory, 4 hours.

Prerequisite: H. E. 26. (4) II, IV (Alternate)
(Seeds)

127—ADVANCED CLOTHING. A creative approach to costume problems is encouraged. Values in both individually made and in ready-to-wear clothes are analyzed. Costumes are designed and constructed—giving as wide experience as possible with various techniques of pattern making, of construction, and of fitting. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: H. E. 27. (4) I, II, IV (Seeds and
(Sumner)

129—INTERIOR DECORATION. A study of color, line, and texture as they are used to create effective interiors suited to modern living. Lectures, 2 hours; laboratory, 4 hours.

Prerequisites: H. E. 25, Art 30b. (4) I, III, IV
(Alternate) (Seeds)

135—DECORATIVE TEXTILES. Survey of decorative textiles through the ages, with the emphasis on modern use of decorative fabrics in the home. Construction of decorative fabrics. Lectures and laboratories.

Prerequisites: H. E. 25; Art 30a, 30b, 30c. (3) II, IV (Alternate) (Sumner)

137—ADVANCED CLOTHING PROBLEMS. This course is planned on the basis of the needs and interests of the individual student. Some suggestive topics for study are: tailoring, remodeling,

children's clothing, the clothing industry, clothing economics, clothing for the family. Lecture, 2 hours; laboratory, 4 hours.

Prerequisite: H. E. 127.

(4) II, III, IV (Seeds)

139a—PROBLEMS IN INTERIOR DECORATION. Selected problems in furnishing the home. The practical aspect of decorating is emphasized; as part of the problems, projects are carried out in furniture refinishing, slip cover making and simple upholstering. Lecture, 1 hour; laboratory, 4 hours.

Prerequisite: H. E. 129.

(3) II, IV (Alternate) (Seeds)

139b—PROBLEMS IN INTERIOR DECORATION. A series of individual problems is selected, then solved by doing the decorating or by making plans, drawings and color plates. Survey is made of interior decoration through the ages. Lecture, 1 hour; laboratory, 4 hours.

Prerequisite: H. E. 139a.

(3) II, IV (Alternate) (Seeds)

237a-d—SEMINAR IN TEXTILES AND CLOTHING. Investigations of special textile and clothing problems. Lecture, 3 hours.

(3) I, II, III, IV (Seeds)

COURSES IN INSTITUTION MANAGEMENT

140—THE SCHOOL LUNCH. This course is designed for those teachers who manage the lunchroom in connection with teaching. The importance of the lunchroom to the school health program, the opportunities of the lunchroom as a teaching unit and as a community co-operative project will be studied. Duties of the manager in formulating employment policies and personnel management will be seen. Consideration will be given to the selection, arrangement, maintenance and care of equipment; the planning of menus, the purchase, storage, preparation and serving of food; the records necessary for financial control. A study of the National School Lunch Program and ways in which a state may participate in the Federal Lunch Program will be emphasized. Lecture, 2 hours; laboratory, 2 hours.

Prerequisites: H. E. 5, H. E. 6, Econ. 1.

(3) IV (Helton)

141—INSTITUTION ORGANIZATION AND ADMINISTRATION. Principles of institution organization, types of institution service, modern industrial tendencies, advertising, personnel, and financial control. Lectures, 3 hours; laboratory, 2 hours.

Prerequisites: H. E. 41 and H. E. 42.

(4) II, IV (Helton)

142a-c—INSTITUTION MANAGEMENT. Application of scientific principles of institution management practice is given in office management and in the different units of service. Lecture, 1 hour; laboratory, 6 hours.

Prerequisite: H. E. 141.

(4) III, IV (Helton)

143—INSTITUTION EQUIPMENT. Selection, arrangement, cost, and care of institution equipment. Problems of lighting, heating, ventilation, and refrigeration for institution food preparation and service units. Lectures, 3 hours; laboratory, 2 hours.
Prerequisite: H. E. 42. (4) IV (Helton)

COURSES IN CHILD DEVELOPMENT

150—TECHNIQUES OF GUIDANCE FOR THE PRE-SCHOOL CHILD. Study of specific techniques of guidance which parents or other adults may use in fostering optimum development of the pre-school child. Observation of teacher techniques in the nursery school and practice in their application is required. Lectures, 2 hours; laboratory, 4 hours.
Prerequisite: H. E. 152. (4) I, III (Mumford)

152—CHILD CARE AND DEVELOPMENT. Study of the care and training of the child from infancy thru the pre-school period. Standards for normal development—physical, social, emotional and mental—are emphasized. Observation of pre-school children and participation in nursery school activities are required. Meetings with parents are required. Lectures, 3 hours; laboratory, 4 hours.
Prerequisites: A. & P. 3, Psych. 7. (5) I, II, III, IV (Bentley)

154—FAMILY LIVING. The inter-locking relationships of community and family living. Emphasis is given to the influence of home conditions on the members of the family, and the results of such influence on attitudes and behaviors that affect community living. Lectures, 4 hours.
Prerequisite: H. E. 61, H. E. 152, Econ. 1, Soc. 1 or R. S. 101 (4) II, IV (Mumford)

155—THE CHILD AND HIS CLOTHING. A study of the appreciation of the needs in children's clothing, the physiological and psychological functions, as well as the selection, cost and care of children's clothing. Lectures and laboratory. (3) IV (Bentley)

156—PLAY AND PLAY MATERIALS. A study of the appreciation of the importance of the right kind of play materials in the development of pre-school children; of materials to use, costs, labor, and time; and construction of toys. Lectures and laboratory. (3) IV (Bentley)

157—INFANT DEVELOPMENT. Study of the development of the child in the pre-natal and infant periods. Consideration is given to the pre-natal factors that affect the child's development, such as heredity, the anatomy and physiology of reproduction, pre-natal nutrition of both the mother and the fetus. The neo-natal period in-

cludes study of sleep, emotion, motor activities, vocalization of the infant and infant feeding. Field trips are required. Lectures, 3 hours.

Prerequisite: A. & P. 3.

(3) IV (Mumford)

COURSES IN HOME MANAGEMENT

161—CONSUMER PROBLEMS. A study of consumer buying and its social and economic aspects. An analysis of the common problems of the manufacturer, the merchant and the consumer in order to understand better the needs and responsibilities of each group. Lectures, 4 hours.

Prerequisite: Econ. 1.

(4) II, III, IV (Wilmore)

162a—HOME MANAGEMENT AND FAMILY RELATIONSHIPS. The philosophy and principles of home management. A study of the management of resources available to the family for optimal development. Includes the mechanics of time, energy, and money management. Emphasis is placed on personal development, social and family relationships. Lectures, 4 hours.

Prerequisites: Econ. 1, H. E. 61.

(4) I, II, III, IV (Wilmore)

162b—HOME MANAGEMENT AND FAMILY RELATIONSHIPS. A residence period in the University home management house is required of all seniors in home economics. The course consists of laboratory work affording experience in the application of principles presented in other courses.

Prerequisite: H. E. 162a; *prerequisite or parallel:* H. E. 102.

(5) I, II, III, IV
(Wilmore)

262—ADVANCED HOME MANAGEMENT AND FAMILY RELATIONSHIPS. A course affording opportunity for special study of social and economic problems affecting family life. Lectures, 3 hours.

Prerequisites: H. E. 162a and 162b.

(3) II (Wilmore)

GENERAL COURSES

170a-d—SPECIAL PROBLEMS. Intensive work on specific phases in any of the fields of home economics, namely: food preparation, meal planning and service, nutrition, clothing, textiles, costume design, housing, child development, institution economics, consumer problems, home management, dietetics, and interior decoration.

(2) I, II, III, IV (Staff)

270a-d—SPECIAL PROBLEMS. All fields.

(2) I, II, III, IV (Staff)

HOME ECONOMICS EDUCATION (See Education)

HORTICULTURE

103—POMOLOGY. Pome Fruits. A course dealing with the theory and practice of commercial apple growing. Adaptation, soil relations, fruitfulness, and orchard management problems are studied in detail. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite: Horticulture 1. (4) I (Waltman)

104—POMOLOGY. Stone Fruits. A detailed study of commercial peach, plum and cherry growing. Lectures, 2 hours; laboratory, 2 hours.

Prerequisite: Horticulture 1. (3) I (Waltman)

105—POMOLOGY. Small Fruits. A detailed study of the care and management of commercial plantings of strawberries, raspberries, grapes and other small fruits. Lectures, 2 hours; laboratory, 2 hours, first half; lectures, 3 hours a week, last half.

Prerequisite: Horticulture 1. (3) I (Waltman)

106a-c—SPECIAL PROBLEMS IN POMOLOGY. This course is designed to meet the need for advanced work.

Prerequisites: Horticulture 1, 103, 104, 105,
and approval of instructor. (3) I, II, III (Waltman)

110—PRINCIPLES OF VEGETABLE GARDENING. A study of the fundamental principles underlying commercial production of vegetables. Lectures, 3 hours; laboratory, 2 hours.

Prerequisites: Hort. 1, Agron. 10. (4) I (Emmert)

111—GROWING VEGETABLE PLANTS UNDER GLASS. Production of vegetable plants grown for transplanting. Types of hot-beds, cold frames and simple greenhouse structures. Lectures, 2 hours; laboratory, 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, III (Emmert)
and approval of instructor

120—LANDSCAPE GARDENING. The adaptation of the principles of landscape. The coordination of buildings with surroundings, selection and uses of material and their requirements. Lectures, 3 hours; laboratory, 2 hours.

(4) III (Elliott)

121—ADVANCED LANDSCAPE GARDENING. A continuation of Horticulture 120, with special attention given to design and the correct use of materials. Lectures, 2 hours; laboratory, 2 hours.

Prerequisite: Hort. 120. (3) II (Elliott)

122—FLORICULTURE. A detailed study of specific groups of flowers, such as roses, bulbs and iris. Lectures, 2 hours.

(2) III (Elliott)

123—PLANT PROPAGATION. A study of the methods of propagating horticultural plants. Lectures, 2 hours; laboratory, 2 hours.

Prerequisites: Hort. 1; Bot. 1a, 1b.

(3) II (Elliott)

124a-c—SPECIAL PROBLEMS IN ORNAMENTAL HORTICULTURE. This course is designed to meet the need for advanced work. Approval by the instructor required.

Prerequisites: Hort. 1, 120, 121;

(3) I, II, III (Elliott)

Bot. 1a, 1b.

125—PLANTS AND PLANTING MATERIALS. A study of woody and herbaceous plants, their identification, suitability for landscape uses and the effects produced. Lecture, 1 hour; laboratory, 2 hours.

Prerequisite: Hort. 120.

(2) III (Elliott)

200a-c—SEMINAR.

(1) I, II, III (Olney and Staff)

201a-c—RESEARCH IN HORTICULTURE.

Prerequisite: Approval by instructors.

(3) I, II, III (Olney and Staff)

FORESTRY

101a—FARM WOODLANDS. History of forests and woodlands in the United States and Kentucky. Silvics, important trees of Kentucky, structure and physiology of trees. Ecology of woodlands; volume of woodland products. Lectures, 3 hours; laboratory, 2 hours.

(4) II (Wiggin)

101b—FARM WOODLANDS. Principles of forest mensuration, increment and yield of growing timber, care and improvement of the farm wood lot. Natural and artificial reproduction, protection, utilization and marketing. Lectures, 3 hours; laboratory, 2 hours.

Prerequisite or concurrent:

(4) II (Wiggin)

Forestry 101a.

VI. EDUCATION

GENERAL STATEMENT OF REGULATIONS GOVERNING GRADUATE WORK IN THE COLLEGE OF EDUCATION

Work leading to the Doctor's degree with a major in education must conform to the same rules and regulations as prescribed in the general requirements, pages 14 to 18 of this Bulletin.

The regulations governing graduate work leading to the degree of Master of Arts in Education and to the degree of Master of Science in Education are as follows:

1. Of the graduate work offered by any candidate for the master's degree with a major in education, at least 18 quarter hours must be in courses at the "200" level or above for persons completing the degree requirements on the 36 quarter hour basis and at least 27 quarter hours must be in courses at the "200" level or above for persons completing the degree requirements on the 54 quarter hour basis.
2. The total number of credits (graduate and undergraduate combined) in education offered by any candidate for the master's degree must be at least 45 quarter hours. The number of graduate credits in education must be at least 18 quarter hours for students graduating on the 36 quarter hour basis and at least 27 quarter hours for students graduating on the 54 quarter hour basis.
3. Two plans are provided for the work which leads to the master's degree:
 - A. The first plan consists of 36 quarter hours of graduate work with an average standing of B or better, 36 weeks of residence, and the writing of a thesis.
 - B. The second plan requires the completion of 54 quarter hours of graduate work with an average standing of B or better, 48 weeks of residence and no requirement of a thesis. Both plans involve the passing of an oral examination covering the major field and the minor field, if any.
4. Students who are candidates for the master's degree in education must earn at least one-half of the credit and residence required while in full residence at the University of Kentucky.
5. If a student desires to qualify for the Master of Arts or the Master of Science degree rather than for the Master of Arts in Education or the Master of Science in Education, he must satisfy the language requirement.

DIVISION OF ADMINISTRATION

101—SCHOOL ORGANIZATION. A course designed to familiarize the prospective teacher with those activities of school organization and administration in which he may be expected to participate. Topics emphasized are administrative control, selection of teachers, tenure, loads, salaries, retirement, supervision, classification and promotion, attendance, community relationships, and professional ethics.

(4) I, II, III, IV (Meece)

198—THE ADMINISTRATION OF PUPIL PERSONNEL. The school census, enforcement of attendance, personnel records, marking, pupil progress, classification. The course is designed primarily for prospective superintendents and attendance officers.

(4) IV (Meece)

202—LOCAL SCHOOL ADMINISTRATION. Public school administration for the prospective superintendent of a county or city school system. The course deals with the state as an educational agency, the local school district, the board of education, the superintendent, the internal organization for the administration of a school system, problems of the teaching personnel, problems of pupil personnel, business management, finance and accounting, the curriculum, school building planning and management, and the supervision of instruction. This is one of the basic courses in school administration and should be taken at or near the beginning of the student's graduate program.

(5) I, IV (Cherry)

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. Topics discussed are: the school and state, school districts, school officers, relations of school districts and municipalities, authority of school districts and district officers, school board procedure and records, tort liability of school districts, personal liability of school officers, contractual authority and liability of boards of education, school money, the school debt, acquisition and use of school property, employment and dismissal of teachers, school attendance, rules and regulations of school boards, discipline and punishment of pupils, textbooks and studies.

Prerequisite: Education 202,
213, or 232.

(4) II, III, IV (Ligon)

204—REDIRECTING EDUCATIONAL EFFORTS AND RESOURCES TO MEET NEW CONDITIONS. The public school and its responsibilities. The course gives particular attention to changing emphasis in education resulting from changes in the social and economic order.

(4) II, IV (Cherry)

206—PROBLEMS OF COLLEGE TEACHING. Methods commonly used in college teaching, bases for measuring instruction, marking systems, qualifications for college teaching, efforts being made to improve college instruction.

(4) (Taylor)

207—SCHOOL BUILDING AND EQUIPMENT. Measurement and evaluation of existing building facilities, planning new school buildings, financing the building program, building operation and maintenance.

Prerequisite: Education 202 or its equivalent.

(4) (Cherry)

210a, b—INDEPENDENT WORK IN SCHOOL ADMINISTRATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work including Education 202, 225a, or 225b.

(4) I, II, III, IV (Cherry)

213—STATE SCHOOL ADMINISTRATION. The administration of American education from the standpoint of the federal and state governments. The course deals with federal relations to education, the state as an educational agency, local units for the administration of education, the scope of the school system, state school support, state control of the material environment and equipment, the training and certification of teachers, and teachers' contracts, tenure, and retirement.

(4) II, IV (Meece)

221a-b—SEMINAR IN ADMINISTRATION. A critical study of selected problems in school administration.

(4) (Cherry, Meece)

231—FINANCING PUBLIC EDUCATION. Budgetary procedure, school costs, school indebtedness, state finance, fiscal reports, and accounting procedures. These topics are treated primarily from the standpoint of the superintendent of schools.

Prerequisite: Education 202 or its equivalent.

(4) II, IV (Cherry, Meece)

233—THE ADMINISTRATION OF THE TEACHING PERSONNEL. A specialized course in school administration, primarily for prospective superintendents. The course emphasizes principles and practices in teacher preparation, teacher selection and placement, measurement of teaching efficiency, salaries, tenure, retirement, teaching loads, sick leave and related problems, and personnel records.

(4) I (Cherry, Meece)

236—BUSINESS ADMINISTRATION OF PUBLIC EDUCATION. A specialized course for prospective superintendents covering

the following aspects of school administration: the organization for business management; the scope of business administration; appraisal, depreciation, and insurance of school property; maintenance of the school plant; plant operation; selection, training, and pay of the custodial staff; purchase and management of supplies; textbook management; selection and purchase of equipment; inventories; transportation.

(4) (Cherry)

238—TRENDS IN HIGHER EDUCATION. A survey of modern tendencies in American higher education in the following areas: scope and development, objectives, organization, administration, curricula, finance, faculty and student personnel. The course is designed to serve the needs of present and prospective college administrators and teachers and others interested in developments in higher education. For those desiring special instruction in the work of the registrar a program of laboratory work will be arranged.

(4) (Chamberlain)

239—THE ADMINISTRATION OF PUBLIC SCHOOLS IN RELATION TO OTHER AGENCIES. The relationship of public schools with other agencies and services, such as the public health service, the agricultural extension service, employment bureaus, public libraries, parent-teacher associations, and professional organizations of teachers. A study is made of the function and organization of such agencies. The general aim of the course is to give the school administrator an understanding of the social agencies which should be included in the total education program of a community.

(4) (Meece)

250a-b—EDUCATIONAL PROBLEMS AND COMMUNITY RESOURCES. Primary emphasis is on the utilization of community resources in the improvement of instruction. Attention is given to national, regional, and local agencies, the work of which is closely associated with the educational program, and to experiments with and demonstrations of new methods and content in education.

(4) (Cherry)

276—ADMINISTRATIVE PROBLEMS IN TODAY'S EDUCATION. Present-day problems of persons in administrative positions in public education. The course is designed to be of assistance particularly to superintendents of schools.

(4) (Cherry)

301a-b—RESEARCH PROBLEMS IN EDUCATIONAL ADMINISTRATION. An independent research course. Students confer individually with the instructor.

Prerequisite: One year of graduate work. (4) I, II, III, IV (Cherry, Meece)

321a-b—RESEARCH PROBLEMS IN HIGHER EDUCATION. An independent research course. Students confer individually with the instructor.

Prerequisite: One year of graduate work.

(4) I, II, III, IV
(Taylor, Chamberlain)

DIVISION OF EDUCATIONAL PSYCHOLOGY AND GUIDANCE

118—EDUCATIONAL TESTS AND MEASUREMENTS FOR ELEMENTARY TEACHERS. The problems of measurement in the elementary school; formal and informal tests; marking systems; etc.
Prerequisite: One quarter of psychology.

(4) III, IV

119—FOUNDATIONS OF ELEMENTARY EDUCATION. The psychology of the child in the primary and intermediate grades.
Prerequisite: One quarter of psychology.

(4)

122—EDUCATIONAL TESTS AND MEASUREMENTS FOR HIGH SCHOOL TEACHERS. The problems of measurement in the junior and senior high school, 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.

(5) I, II, III, IV

147—FOUNDATIONS OF SECONDARY EDUCATION. The psychology of the pupil in junior and senior high school.
Prerequisite: One quarter of psychology.

(4) I, IV

216—SEMINAR IN TESTS AND MEASUREMENTS. A critical study of certain problems in measurement; individual work.
Prerequisite: Education 122 or 118.

(4) IV

222—METHODOLOGY OF EDUCATIONAL 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: 16 quarter hours in Education.

(4) I, III, IV (Taylor)

223—EDUCATIONAL STATISTICS. A non-mathematical study of the applications of statistical and graphical methods to educational data.

(5) III, IV

254—PROBLEMS IN EDUCATIONAL PSYCHOLOGY. A critical survey of the conflicting schools of psychology, theories of learning, etc.

Prerequisite: One year of psychology.

(4) I, II, III

255a—GUIDANCE IN TODAY'S SCHOOLS. A course for superintendents, principals, teachers, counselors, and others who have the

responsibility of carrying out an effective program of guidance in the public schools. The course deals with principles and techniques for the formulation and evaluation of a complete guidance program including inventories, counseling, placement, and follow-up.

(4) IV

255b—TECHNIQUES OF COUNSELING. This course is intended for all teachers. Attention will be given to the counseling of pupils on educational, vocational, and personal problems. Each person enrolled will be given an opportunity to work with pupils in determining aptitudes and abilities and in aiding them to work out programs for their continued education.

(4) IV

258a-b—INDEPENDENT WORK IN EDUCATIONAL PSYCHOLOGY. An independent work course for students who have done a minimum of 18 quarter hours of graduate work including Education 122, 147, or 254.

(4) I, II, III, IV

DIVISION OF FOUNDATIONS OF EDUCATION

CURRICULUM

114—EDUCATIONAL SOCIOLOGY. The application of sociological findings to the field of education within the school and home.

(4) (Hartford)

127—THE ELEMENTARY CURRICULUM. The philosophy and techniques of curriculum construction and some practical work in construction.

(4) (Spain)

175a-f—MODERN EDUCATIONAL PROBLEMS. A brief survey of some of the problems in modern education.

(4)

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.

(4) IV

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.

(4)

186—VISUAL TEACHING. Methods and techniques of visual instruction. Special emphasis is placed on charts, slides, graphs, maps, still pictures, motion pictures, and other visual aids; their effective use in teaching; and the planning of outlines and lessons involving their use. Attention is given also to the administration of visual aids in the school.

(4) I, IV (Clifton)

200a—PHILOSOPHY OF EDUCATION. An advanced course dealing with the philosophy underlying the larger educational problems of today.

Prerequisite: 16 quarter hours in Education. (4) II, IV (Hartford)

200b—PHILOSOPHY OF EDUCATION. A continuation of Education 200a. (4) III, IV (Hartford)

205a—REVIEW OF CURRENT EDUCATIONAL LITERATURE. An extensive study of current educational literature as found in educational periodicals.

Prerequisite: 16 quarter hours in Education. (4) I, III, IV (Hartford)

205b—REVIEW OF CURRENT EDUCATIONAL LITERATURE. A continuation of Education 205a. (4) II, IV (Hartford)

225a—SUPERVISION OF INSTRUCTION. The development, purposes, organization, and planning of supervision; use of classroom visitation, demonstration lessons, teachers' meetings, and individual conferences; the course of study, tests and measurements, equipment and supplies, the teacher, and the pupil.

(4) I, III, IV (Hartford, Spain)

225b—SUPERVISION OF INSTRUCTION. Planning of specific programs for the improvement of instruction which are to be directed by superintendents, principals, supervisors, or helping teachers. Special consideration is given to current programs of in-service education of teachers as sponsored by different educational agencies in Kentucky.

(4) II, IV (Hartford, Spain)

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.

(4) IV (Hartford, Spain)

227a—PRINCIPLES OF CURRICULUM CONSTRUCTION. A survey of modern curriculum making as carried on in progressive city and county school systems, laboratory schools, and state school systems; also an intensive study of the principles underlying curriculum revision.

Prerequisites: Teaching experience; 16 quarter hours in Education. (4) II, IV (Spain)

227b—TECHNIQUES IN CURRICULUM CONSTRUCTION. The techniques employed to determine content of courses of study.

Prerequisites: Teaching experience; 16 quarter hours in Education. (4) III, IV (Spain)

228a-d—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) (Taylor)

230—PROBLEMS OF EDUCATIONAL SOCIOLOGY. An advanced course in the application of sociology to the educational field.
Prerequisite: 16 quarter hours in Education, including Education 114. (4) IV (Hartford)

234—PROBLEMS IN CURRICULUM MAKING. The selection of materials in the elementary and secondary fields, the types of units used in modern instruction, how the child learns, the various educational agencies in the community, and how the school may be made a real community center. (4) I (Spain)

245—ORGANIZATION OF AUDIO-VISUAL AIDS. Beginning the audio-visual program, qualifications and duties of staff members assisting in the audio-visual program, sources and criteria for judging equipment and supplies, the audio-visual aids budget, projection mechanics, in-service teacher training. (4) II (Clifton)

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, motion pictures appreciation. (4) III (Clifton)

247a-b—INDEPENDENT WORK IN PHILOSOPHY OF EDUCATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work including Education 200a, b and 227 a or b. (4) I, II, III, IV (Hartford, Spain)

275—ADVANCED PROBLEMS IN PHILOSOPHY OF EDUCATION. Problems in modern education. Special emphasis is given to such problems as social strains and conflicts, cultural and community foundations, the readjustment and reconstruction of our various traditions, and the process of solving these problems from the standpoint of the schools. (4)

HISTORY OF EDUCATION

117a—HISTORY OF EDUCATION. A survey of the history of secondary education from the Greek period to the present time. (4)

117b—HISTORY OF EDUCATION. A survey of the history of elementary education beginning with Athenian education and closing with present elementary education in America. (4)

201a—EARLY HISTORY OF EDUCATION IN THE UNITED STATES. The development of education through the colonial period and the early years of the national period. (4)

201b—RECENT EDUCATIONAL HISTORY IN THE UNITED STATES. The growth of education from the beginning of public education to the more recent educational movements.

(4)

219—GREAT EDUCATORS AND THEIR WORK. 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.

(4)

220—COMPARATIVE EDUCATION. Comparisons of modern national systems of education.

(4) II, IV (Taylor)

235—HISTORY OF EDUCATION IN KENTUCKY. A course designed to give the student a historical background of education in Kentucky.

(4) IV (Ligon)

237a-b—RESEARCH IN HISTORY OF EDUCATION. Independent work for students in history of education.

(4)

DIVISION OF INSTRUCTION AND PLACEMENT BUSINESS EDUCATION

104—FOUNDATIONS OF BUSINESS EDUCATION IN THE HIGH SCHOOL. The origin, the status, and the objectives of business education in the secondary school. Required of business education majors.

(4) I, IV

158a—TEACHING SECRETARIAL SUBJECTS. Special techniques and devices for teaching shorthand, typewriting, and secretarial office practice. Required of business education majors.

(3) II, IV

158b—TEACHING ACCOUNTING. Materials and techniques used in the teaching of accounting. Required of business education majors.

(3) III, IV

184—TEACHING OFFICE APPLIANCES. Methods and materials used in teaching the various office appliances to high school pupils. Dictating machines, mimeographs, multigraphs, graphotypes, mimeoscopes, addressing machines, filing devices, calculating machines, and other appliances are used.

(3) I, IV

192—TEACHING GENERAL BUSINESS. A critical study of the objectives of the general business course. A syllabus is prepared for teaching this subject.

(3) IV

208a-d—PROBLEMS IN BUSINESS EDUCATION. Advanced problems in the field. The type of problems considered is influenced by the interests and needs of the group. Some of these problems are: testing in business subjects, extracurricular activities in commerce, job studies, placement and follow-up, type of equipment, and supervision.

(4) III, IV

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.

(4) IV

257a-b—SEMINAR IN BUSINESS EDUCATION. A study of current literature in business education with special reference to trends in this field.

(1) IV

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.

(4) II, IV

260—TEACHING CONSUMER COURSES IN THE HIGH SCHOOL. Techniques and devices for teaching high school pupils the various aspects of consumer education. Emphasis is placed on procedures rather than on content and the student is presumed to have a background of training in economics before taking the course.

(4) I, IV

270—BUSINESS TEACHER EDUCATION IN COLLEGES AND UNIVERSITIES. A survey of business teacher education in public and private colleges, teachers' colleges, and universities. Major emphasis is placed upon the development of curricula which will meet certification requirements in the various states, and improve secondary business education.

(4) IV

271—THE SUPERVISION OF BUSINESS EDUCATION. Duties and responsibilities of city and state supervisors, department heads, and others engaged in directing business education.

(3) IV

272a-b—INDEPENDENT WORK IN BUSINESS EDUCATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work, one-half of which must have been in business education.

(4) I, II, III, IV

ELEMENTARY EDUCATION

110—ADVANCED INDUSTRIAL ARTS. The industrial processes involved in records and shelter suitable for classroom experimentation. As a result of work in this course the teacher should be able to guide children in construction activities pertaining to the study of records and shelter—book binding, block printing, paper decorating, toy making, elementary woodwork, and interior decorating.

(3) III, IV (Haines)

133—STUDENT TEACHING IN THE ELEMENTARY SCHOOL. A course designed to give the student experience with and practice in the program of a modern elementary school. (Note: The student spends from 8:00 a.m. until 2:00 p.m. in the classroom for the quarter. One hour per day additional, 2:00 p.m. to 3:00 p.m., is spent in conference and discussion with the supervising teacher. A student who has had three credits in student teaching may take this course with reduced hours and reduced credits.)

Prerequisites: Education 44; senior standing in the elementary curriculum. (15) I, II, III, IV (Ginger, and Supervising Teachers)

141—PROBLEMS IN DIAGNOSTIC AND REMEDIAL READING. Problems of prevention, diagnostic, and remedial work in reading, with demonstration of the use of instrumentation in diagnosis and correction of reading difficulties and the application of these clinical procedures to problem cases. The course includes problems of elementary and high school teachers and administrators. (Three hours lecture and discussion and two hours laboratory.)

(4) IV (Duncan)

172—TEACHING READING IN THE ELEMENTARY SCHOOL. A practical application of principles derived from psychology and research, with discussion of aims, primary reading, activities leading to reading, reading in the intermediate grades, oral and silent reading, phonics, diagnostic and remedial work, means of testing, suitable material for each grade.

(5) III, IV (Duncan)

173—TEACHING LITERATURE TO CHILDREN. Literature for children from kindergarten to Grade VI; children's interests at different ages and stages of development; story telling and dramatization; reading and book reports from various types of literature—modern fantastic tales, realistic stories, biography, folklore, myths and legends, and poetry.

(5) II, IV (Duncan)

174—PRE-SCHOOL THEORY AND MANAGEMENT. The nature, development, care and educational training of the pre-school child. Emphasis is placed on the formation of proper emotional

and social habits and standards for the right environmental set-up. Students schedule regular periods for observing and assisting in the kindergarten.

(4) I (Clark)

176—PRE-SCHOOL ORGANIZATION AND TEACHING. The pre-school movement in Europe and America, the organization equipment, curriculum, and methods of pre-school teaching. Students taking this course schedule regular periods for observing and assisting in the kindergarten.

(4) II (Clark)

196—SCIENCE IN THE ELEMENTARY SCHOOL. A background of elementary science usable with children in the first six grades. The course includes planning units of work, organizing and using materials and references, making bibliographies for teachers and children, use of illustrative material, and excursions.

(5) I, IV (Estelle Adams)

212—THE ELEMENTARY SCHOOL. A course designed to help the superintendent, elementary principal, and elementary supervisor in a better understanding of the modern elementary school. The activity program, objectives, and research and study in the skills and content subjects of the elementary curriculum are discussed from the standpoint of supervision.

(5) III, IV (Duncan)

215a-b—INDEPENDENT WORK IN ELEMENTARY EDUCATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work including Education 212 or 229.

(4) I, II, III, IV (Duncan)

224—ORGANIZATION AND SUPERVISION OF STUDENT TEACHING. A course planned for students preparing to do critic teaching in the fields of elementary and secondary education. It includes the basic principles underlying the entire program and deals with specific problems for critic teachers on the elementary and secondary levels.

(5) II, IV (Duncan)

229—THE ELEMENTARY PRINCIPAL. Problems related to the elementary principalship—the professional preparation, selection, and status of the principal, the relation of the principal to other administrative officers, supervisors, teachers, pupils, and parents; problems of attendance, discipline, health, and records; the application of sound principles to the improvement of teaching. Emphasis is placed on the community relationship of elementary principals and teachers and ways in which they may co-

operate and improve the life of the community. Attention is given also to problems presented by members of the class.

(5) I, IV (Duncan)

308a-b—RESEARCH PROBLEMS IN ELEMENTARY EDUCATION. An independent research course. Students confer individually with the instructor.

Prerequisite: One year of graduate work. (4) I, II, III, IV (Duncan)

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 own school or community situations; when possible, the instructor visits them in the field. This course includes projects, demonstrations, readings, and discussion.

(3) II, IV (Capurso)

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) III, IV (Capurso)

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.

(3) III, IV (Capurso)

SECONDARY EDUCATION

105—FUNDAMENTALS OF SECONDARY EDUCATION. Laboratory methods of instruction—fundamental processes, control, operation, administration. (4) I, II, III, IV (Ligon)

107—SAFETY EDUCATION. Techniques and skills for the teaching of safety education in all its aspects. Particular emphasis is placed on driver education and the problems related thereto.

(4) (Ginger)

111—REMEDIAL READING IN THE SECONDARY SCHOOL. A study of diagnostic and remedial work with reading disability cases in the junior and senior high school. This course is designed to enable the teacher to diagnose reading difficulties and to remedy them. Observation, case studies, and practice in remedial work with children are required of all students. The course includes a critical study of the investigations and literature in the field.

(3) (Duncan)

142—STUDENT TEACHING IN ART. A course planned for teachers who contemplate becoming supervisors of art in the public schools.

Prerequisites: Education (see Professional Major); 27 quarter hours in Art; senior standing. (9) I, II, III, (Haines)

153—STUDENT TEACHING IN ENGLISH. Course of study, minimum essentials, materials, methods, testing; language and composition; literature. The course includes observation and practice, five hours; and conferences, two hours.

Prerequisites: Education (see Professional Major); 27 quarter hours in English; senior standing. (12) I, II, III, IV (Anderson, Shipman)

154—STUDENT TEACHING IN LANGUAGES. Aims and objectives, course of study, methods, tests, equipment, analysis of textbooks. The course includes observation and practice, five hours; and conferences, two hours.

Prerequisites: Education (see Professional Major); 27 quarter hours in subject to be taught; senior standing. (12) I, II, III, IV (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, five hours; and conferences, two hours.

Prerequisites: Education (see Professional Major); 27 quarter hours in subject to be taught; senior standing. (12) I, II, III, IV (Kemper)

156—STUDENT TEACHING IN MATHEMATICS. Course of study, materials, methods, testing. The course includes observation and practice, five hours; and conferences, two hours.

Prerequisites: Education (see Professional Major); 27 quarter hours in Mathematics; senior standing. (12) I, II, III, IV (Church)

157—STUDENT TEACHING IN THE SOCIAL STUDIES. Objectives, preparation of the teachers, courses of study, methods, supplementary materials, visual instruction, testing, professional helps. The course includes observation and practice, five hours; and conferences, two hours.

Prerequisites: Education (see Professional Major); 27 quarter hours in subject to be taught; senior standing. (12) I, II, III, IV (Peck, Shipman)

169a-c—STUDENT TEACHING IN PHYSICAL EDUCATION. A course for students who desire to become directors of physical education and coaches of athletics in the public schools.

Prerequisites: Education (see Professional Major); 27 quarter hours in Physical Education; senior standing. (3) I, II, III (Clay, Gilb)

177a-c—STUDENT TEACHING IN MUSIC. A course planned for teachers who contemplate becoming supervisors of music in the public schools.

Prerequisites: Education (see Professional Major); 27 quarter hours in Music; senior standing.

(3) I, II, III

193—STUDENT TEACHING IN BUSINESS EDUCATION. Practice in junior business training; in shorthand; in typewriting; and in such other commercial subjects as are commonly taught on the secondary level.

Prerequisites: Education (see Professional Major); 27 quarter hours in Commerce; senior standing

(9) I, II, III, IV
(Humphreys)

214a—THE SECONDARY SCHOOL. A course designed to acquaint the prospective principal or superintendent with the nature and function of the secondary school. This is one of the basic courses in the field of administration and should be taken at or near the beginning of the student's graduate program.

(4) I, II, IV (Ligon, Ginger)

214b—THE SECONDARY SCHOOL. A continuation of Education 214a.

(4) III, IV (Ligon, Ginger)

232—HIGH SCHOOL ADMINISTRATION. A course designed primarily for high school principals and prospective administrators. Topics emphasized are secondary school organization, the principal, the staff, the pupil, program of studies, schedules, community relationships, records and reports, articulation, library, plant, finance, and the aims of secondary education.

(4) I, III, IV (Ligon)

241—PROBLEMS IN TEACHING THE SOCIAL STUDIES. Approved methods of teaching the social studies. Source materials dealing with the problems of teaching, such as research findings, yearbooks, and periodicals are investigated and current practices in the best high schools of the country are stressed.

(4) IV (Peck)

242—PROBLEMS IN TEACHING ENGLISH. Approved methods of teaching English. Source materials dealing with the problems of teaching, such as research findings, yearbooks, and periodicals are investigated and current practices in the best high schools of the country are stressed.

(4) IV (Anderson)

243—PROBLEMS IN TEACHING MATHEMATICS. Approved methods of teaching mathematics. Source materials dealing with

the problems of teaching, such as research findings, yearbooks, and periodicals are investigated and current practices in the best high schools of the country are stressed.

(4) IV

244—PROBLEMS IN TEACHING PHYSICS. Approved methods of teaching physics. Source materials dealing with the problems of teaching, such as research findings, are investigated and current practices in the best high schools of the country are stressed.

(4) IV

248a-b—INDEPENDENT WORK IN SECONDARY EDUCATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work including Education 214 or 232.

(4) I, II, III, IV (Ligon)

249—EXTRACURRICULAR ACTIVITIES. Underlying principles, faculty activities, home-room activities, student council, clubs, athletics, publications, dramatics, honor societies, commencements.

*Prerequisite: 16 quarter hours
in Education.*

(4) III (Ligon)

307a-b—RESEARCH PROBLEMS IN SECONDARY EDUCATION. An independent research course. Students confer individually with the instructor.

*Prerequisite: One year of
graduate work.*

(4) I, II, III, IV (Ligon)

DIVISION OF VOCATIONAL EDUCATION

AGRICULTURAL EDUCATION

179—DETERMINING CONTENT IN VOCATIONAL AGRICULTURE. Interpretation of data as a basis for course building. Each student works out the content of a four-year course in vocational agriculture.

(4) IV (Hammonds)

181—TEACHING VOCATIONAL AGRICULTURE. Preparation for the teaching of agriculture. About one-half of the course is practice.

(11) I, II, III (Armstrong, Hammonds,
Tabb, Truitt, Wall)

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, III (Hammonds)

188—FARM PRACTICE SUPERVISION. Practice and directed study in supervising farm practice of pupils in vocational agriculture.
(1) (Armstrong, Hammonds, Tabb)

280—METHOD IN TEACHING VOCATIONAL AGRICULTURE. The principles of method applied to the teaching of agriculture.
Prerequisite: Experience in teaching vocational agriculture (4) IV (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.
(4) (Hammonds)

287a—ADVANCED PROBLEMS IN AGRICULTURAL EDUCATION. Specific problems selected according to the needs of the group.
(5) I, II, III, IV (Hammonds, Armstrong)

287b—SELECTING TEACHING MATERIALS. Selection of specific references and other teaching materials to be used in the teaching of vocational agriculture
(4) IV (Armstrong)

287c—ADULT-FARMER SCHOOLS. Preparation for teaching adult farmers; organization of adult-farmer schools, curriculum content, method of teaching, follow-up work.
(4) IV (Hammonds, Armstrong)

287d—DIRECTING FARM PRACTICE. Farm practice as a method of teaching; standards, planning, supervision, records.
(4) IV (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.
(4) IV (Tabb)

287f—YOUNG-FARMER SCHOOLS. Content and method of teaching young-farmer courses in vocational agriculture.
(4) (Hammonds, Armstrong)

289a-b—RESEARCH IN AGRICULTURAL EDUCATION. Individual problems of importance to agricultural education.
(5) I, II, III, IV (Hammonds, Armstrong)

DISTRIBUTIVE OCCUPATIONS

112—DETERMINING TEACHING CONTENT IN DISTRIBUTIVE OCCUPATIONS. Course construction in the field of distribu-

tive occupations. This course is planned to meet the needs of persons engaged as instructors in the field of distributive occupations.

(4) I, II, III, IV (Baker)

115a-b—PROBLEMS IN DISTRIBUTIVE EDUCATION. Problems involved 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. (4) I, II, III, IV (Baker)

116—PROBLEMS OF THE COORDINATOR IN DISTRIBUTIVE OCCUPATIONS. Problems facing the coordinator as he acts in the capacity of intermediary between the school and the business world. Problems in placing students in stores, in follow-up methods, in store contacts, and in securing the cooperation of personnel management are discussed.

(4) I, II, III, IV (Baker)

128—TECHNIQUE OF TEACHING DISTRIBUTIVE OCCUPATIONS. A study of the methods of teaching as applied to distributive occupations education. The purpose of the course is to train prospective teachers to teach in the field of distributive occupations.

(4) I, II, III, IV (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, 6a, (4) I, II, III
6b, 26, 29, and 51; *Education 147.* (Parker)

162—STUDENT TEACHING IN HOME ECONOMICS. Practical application of methods in teaching various phases of home economics.

Prerequisite: Education 160. (8) I, II, III (Parker)

165—ADULT EDUCATION IN HOME ECONOMICS. Problems involved in teaching vocational homemaking in day, part-time, and evening schools.

(4) I, II, III (Parker)

261—HOME ECONOMICS SUPERVISION. A course planned primarily to help prepare teacher trainers and supervisors of home economics education.

Prerequisites: Education 160 and 162;
experience in teaching; (4) IV (Parker)
approval of instructor.

263—CURRENT PROBLEMS IN HOME ECONOMICS EDUCATION. Recent developments in the field of home economics education.

Prerequisites: Education 160 and 162; (4) IV (Parker)
experience in teaching.

264—MODERN TENDENCIES IN HOME ECONOMICS EDUCATION. A basic course for graduate students in home economics education. It is designed to acquaint students with modern tendencies in education. Some problems considered are the contribution of home economics to the general education of boys and girls, evaluation, and integration.

(4) (Parker)

265a, b—INDEPENDENT WORK IN HOME ECONOMICS EDUCATION. An independent work course for students who have done a minimum of 18 quarter hours of graduate work, one course of which must have been done in home economics education.

(4) I, II, III, IV (Parker)

266a-c—SEMINAR IN HOME ECONOMICS EDUCATION. Individual investigations and reports on special problems in home economics education.

(3) I, II, III (Parker)

267—DIRECTED SUPERVISION IN HOME ECONOMICS EDUCATION. Teaching home economics classes for observation; directing student teachers under the guidance of a supervising teacher, visiting schools with the itinerant teacher trainer in different sections of the state; organizing teaching materials. (This course may be taken parallel to or following Education 261.)

Prerequisites: Two years' teaching experience; recommendation by the Department of Home Economics Education.

(4) (Parker)

268—HOME ECONOMICS CURRICULUM CONSTRUCTION. A study of the underlying principles of curriculum building for junior and senior high school home economics.

Prerequisites: Education 160 and 162.

(4) IV (Parker)

269—EVALUATION IN HOME ECONOMICS EDUCATION. A course intended 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.

(4) IV (Parker)

INDUSTRIAL EDUCATION

123—VOCATIONAL GUIDANCE. A course designed to give the teachers, principals, superintendents, and welfare workers a comprehensive view of the factors in vocational guidance and of the agencies contributing to or influencing life choices, and an analysis of the human and economic resources of a given civic unit.

(4) (Hankins, Crumpton)

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.

(3) I, II, III, IV (Hankins, Crumpton)

136—SURVEYS IN INDUSTRIAL EDUCATION. Techniques and methods for making various types of surveys to determine needs for vocational training in trades and industries. Forms, questionnaires, outlines, interviews and conferences are studied as means of evaluating the effectiveness of industrial education programs.

(3) I, II, III, IV (Hankins, Crumpton)

137—SPECIAL PROBLEMS IN INDUSTRIAL EDUCATION. The supervised study of approved problems in industrial education on a research basis.

(3) I, II, III, IV (Hankins, Crumpton)

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.

(3) I, II, III (Hankins, Crumpton)

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 is tied up with the problems and principles of industrial education.

(3) I, II, III, IV (Hankins, Crumpton)

183—METHODS IN INDUSTRIAL EDUCATION. The most approved methods in instructional management, including lesson planning, in the field of vocational industrial education.

(4) IV (Hankins, Crumpton)

VOCATIONAL EDUCATION

211—THE ADMINISTRATION OF VOCATIONAL EDUCATION. A course designed for superintendents and principals of high schools. The purpose of the course is to train for administering and supervising vocational education. Topics emphasized include aims and purposes of vocational education, relationship of vocational to other education, financing vocational education, and relationship of local to state administration.

(4) II (Hammond, Armstrong)

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.

(4) I, II, III, IV (Armstrong)

PHYSICAL EDUCATION

The physical Education Department offers graduate work toward the degree of Master of Arts or the degree of Master of Arts or Master of Science in Education. Requirements for the degree of Master of Arts with a major in physical education are stated on pages 9 and 10. Requirements for the degree of Master of Arts or Master of Science in Education with a major in physical education are stated on page eleven.

115—HISTORY AND SURVEY OF THE DANCE. A study of the history and development of the various dance forms, including ballet dances, free dances, folk dances, national dances, eastern dances, American Indian dances, and a study of modern tendencies, and relation of dancing to physical education. Four hours recitation.

(4) I, II, IV (Shaw)

120a, b—KINESIOLOGY. A study of the principle types of exercise, particularly muscular and mechanical factors involved in bodily movement and function. A study of the prevention and treatment of certain physical defects and deformities through a knowledge of body mechanics. Three hours per week.

(3) I, II, III, IV (Hackensmith)

NOTE: This course meets the requirement established by graduate schools of physiotherapy.

123—HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION. Study of the historical development of Physical Education, the contributions of individuals and organizational movements. An interpretation of the biological, physiological and sociological principles of physical education. Five hours recitation and lecture.

(5) II, III (Hackensmith)

125—ADMINISTRATION AND ORGANIZATION OF RECREATION. A study of policies and procedures involved in organization and administration of recreation for children, youth, and adults. Four hours per week.

(4) III, IV (Staff)

126—OPERATION AND FUNCTION OF PLAYGROUNDS AND COMMUNITY CENTERS RECREATION. Planning the program, choosing activities, development of local resources and facilities for the playground and community center. Four hours recitation and lecture.

(4) II (Pherigo)

129—PHYSICAL EDUCATION IN THE SECONDARY SCHOOL. Required of all physical education majors who wish to qualify for teacher certification as a physical education teacher on the secondary school level. Study of theory, practice and methods of teaching

physical education activities and programs for secondary school age pupils. Four hours recitation and lecture.

(4) I, IV (Lancaster)

131—ADVANCED BASKETBALL. Lectures and recitations on theory and practice of team play in basketball. Special emphasis is placed on systems of offense and defense as used by the leading coaches throughout the country. Three hours per week.

(3) III, IV (Rupp)

142—ADVANCED FOOTBALL. Lectures and recitations on the theory of football. Special stress is placed on generalship, signal systems, scouting and conditioning of players. Football is studied from the coach's viewpoint. Three hours a week.

(3) II, IV (McCubbin)

149—ADMINISTRATION OF PHYSICAL EDUCATION AND ATHLETICS. 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. Four hours per week.

(4) I, IV (Staff)

151—ORGANIZATION OF INTRAMURAL SPORTS. A study of the history and development of intramural sports on the elementary, secondary, and college levels. Three hours per week.

(3) I, IV (McCubbin)

200—GRADUATE SEMINAR IN PHYSICAL EDUCATION. Graduate students majoring in physical education who are engaged in writing a thesis should register for this course. Recitations, three hours a week.

(3) I, IV (Hackensmith)

201a, b—RESEARCH IN PHYSICAL EDUCATION. The theory and practice of the measurement of strength, size and maturity, power, motor educability, and agility. The use of tests in classification and achievement. Four hours per week.

(4) I, II, III, IV (Hackensmith)

202—PROBLEM COURSES IN CONTEMPORARY MOVEMENTS IN PHYSICAL EDUCATION. A detailed study and analysis of various foreign systems and procedures in physical education and athletic activities, and present athletic and physical education trends in the United States. Recitations and lectures, four hours a week.

(4) II, IV (Hackensmith)

203—CURRENT STUDIES IN THE ADMINISTRATION OF PHYSICAL EDUCATION. For administrative officers, directors of physical education, and leisure time activities. A study of represen-

tative programs of physical education and standards for evaluating programs. Lecture and recitation, three hours a week.

(3) II, IV (Lancaster)

204—CURRENT STUDIES IN THE ADMINISTRATION OF ATHLETICS. For athletic directors, supervisors, and administrative procedures for colleges, public school systems and municipal athletic leagues. Lecture and recitation, three hours a week.

(3) III, IV (Lancaster)

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.

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. Lectures and recitations, four hours a week.

Prerequisite: Com. 1 or

(4) I, II, IV

Pol. Sci. 15.

APPLIED MECHANICS

100—STRENGTH OF MATERIALS. A general course in the application of the principles of mechanics to the solution of problems in stress and strain due to direct forces, shear, bending, torsion, eccentric loads and combined stresses; in beams, columns, thin cylinders, springs, etc. Lecture and recitation, five hours a week.

Prerequisite: Ap. Mech. 3.

Prerequisite or concurrent:

(5) I, II, III, IV

Math. 20b.

(Hawkins, Lawson)

106—ADVANCED STRENGTH OF MATERIALS. Unsymmetrical bending of beams, bending and deflection of thin plates, stress of analysis of thick walled cylinders, and rotating discs. Theory of elastic energy and curved beams, stress concentration and fatigue, lecture and recitation, five hours a week.

Prerequisites: Math. 20b and Ap. Mech. 100.

Prerequisite or concurrent:

Math. 105a.

(5) III, IV (Hawkins, Lawson)

107—MECHANICAL VIBRATIONS. Vibrations of systems of one and several degrees of freedom, balancing of rotating machines, critical speeds, torsional and lateral vibrations of shafts. Lectures and recitations, five hours a week.

Prerequisites: Math. 105a, Ap.

(5) I, III (Hawkins)

Mech. 4 and Ap. Mech. 100.

ENGINEERING DRAWING

115—PHOTOGRAPHY. Fundamental principles of photography. Lectures on the optics and chemistry of photography together with practical demonstrations. Negative making, printing, etc. Lecture, one hour; recitation, one hour; laboratory, two hours a week.

Prerequisites: Chem. 1a,
Phys. 3a.

(4) II, III (Nollau)

CIVIL ENGINEERING

107—SOIL MECHANICS. A study of soil and its utilization in foundations for structures and as subgrade for highways. Stabilization and improvement of bearing values. Lecture and recitation, three hours, laboratory, four hours a week.

Prerequisite: Appl. Mech. 100.

(5) III (Baker)

110a—REINFORCED CONCRETE. A study of concrete mixtures. Theory and design of beams, slabs, columns, bridges, buildings, retaining walls, dams, arches, and rigid frames. Lectures and recitations, 4 hours; drawing room, 2 hours; laboratory, 2 hours a week.

Prerequisite: Civ. Eng. 171a.

(6) II (Mory)

110b—REINFORCED CONCRETE. Continuation of 110a. Lectures and recitations, 3 hours; drawing room, 4 hours a week.

Prerequisite: Civ. Eng. 110a.

(5) III (Mory)

114—ADVANCED SURVEYING. Triangulation and base line measurement, precise and trigonometric leveling. Methods of adjustment. Observation and calculations for determining time, azimuth, latitude and longitude. Theory and practice of photogrammetry. Lectures and recitations, 3 hours; field work, 3 hours a week.

Prerequisite: Civ. Eng. 12.

(4) I (Shaver)

120—HYDRAULICS. Principles of hydraulics and hydrodynamic pressure. Flow of water through orifices, nozzles, pipes and open channels, over weirs, against stationary and moving vanes. Loss from friction and other sources. Lectures and recitation, three hours a week.

Prerequisite: Phys. 3a.

(3) I, II, III, IV (Cheek)

Prerequisite or concurrent: Math. 20b.

122—WATER POWER ENGINEERING. Investigations, design and operation of water power projects. Lecture and recitation three hours a week.

Prerequisite: C. E. 120.

(3) III (Cheek)

123—HYDRAULICS LABORATORY. Experimental investigation of flow of water in pipes, channels and over weirs; measure of

friction and hydrostatic pressure; hydraulic machinery. Laboratory, four hours a week.

Prerequisite or concurrent:

C. E. 120.

(2) I, II, III, IV (Cheek)

171a—THEORY OF STRUCTURES. Laws of statics, wind, impact, live and dead load, reactions, shear moments and influence lines. Methods of design, including beams, girders, columns and various types of trusses. Lectures and recitations, five hours a week.

Prerequisite or concurrent:

(5) I, II, III (Mory)

Applied Mech. 100.

171b—THEORY OF STRUCTURES. Continuation of Civ. Eng. 171a. Lectures and recitations three hours a week.

Prerequisite: Civ. Eng. 171a.

(3) III (Mory)

173a—STEEL STRUCTURES. Design and detail of steel buildings and highway bridges. Lecture, one hour; drawing room, nine hours a week.

Prerequisite: C. E. 171a.

(4) I, II, III (Mory)

173b—STEEL STRUCTURES. Design and detail of steel railway bridges. Drawing room, nine hours a week.

Prerequisite: C. E. 173a.

(3) II (Mory)

174—GRAPHIC SOLUTIONS. Principles and methods of determining stresses by graphic solution as applied to structural engineering. Elementary problems in the design of timber, steel, and masonry structures. Lecture, 1 hour; drafting room, 6 hours a week.

Prerequisite or concurrent:

(3) I, II, III (Mory)

Civ. Eng. 171a.

202a, b—CONSTRUCTION. Advanced work in plain and reinforced concrete, theory, design and experimental work. Class work, five hours; laboratory, ten hours a week.

(9) I, II (Mory)

232a, b—HIGHWAY ENGINEERING. Advanced course designed for graduate civil engineers who wish to enter the field of highway engineering. Road laws, organization of highway departments, traffic, cost, contracts and specifications, laboratory investigations on all kinds of surfacing materials. Structures, their design and maintenance. Class work, five hours; laboratory, ten hours a week.

(9) I, II (Chambers)

242a, b—RAILROAD ENGINEERING. Advanced course in location, construction, maintenance, economical selection of lines, grade reduction, cost of operation, valuation, structures and their maintenance. Class work, five hours; laboratory, ten hours a week.

(9) II, III (Shaver)

262a, b—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, five hours; laboratory, ten hours a week.

(9) III, IV (Shaver)

272a, b—STRUCTURAL ENGINEERING. Advanced course in structural design, mill buildings, railroad and highway bridges. The use of influence diagrams and detail drawings. Class work, five hours; laboratory, ten hours a week.

(9) II, III (Mory)

282a, b, c—SPECIAL PROBLEMS IN CIVIL 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 Civil Engineering. Laboratory, eighteen hours a week.

*Prerequisite: Approval of
Head of the Department.*

(9) (Staff)

SANITARY ENGINEERING

151—WATER SUPPLY AND WATER WORKS. Sources of supply: rainfall, surface water, rivers, lakes and ground water. Theory of filtration, purification, equipment and distribution. Problems in design and construction. Lecture and recitation three hours a week.

Prerequisite: C. E. 120.

(3) II (Cheek)

152—SEWERS AND SEWAGE DISPOSAL. Sanitary and storm sewer systems; theory of design; method of disposal. Lecture and recitation three hours a week.

Prerequisite: C. E. 120.

(3) II (Cheek)

153—DESIGN OF WATER WORKS AND SEWERS. Design of water supply system, storm and sanitary sewers and disposal plants. Specifications and estimates of cost. Drawing room, six hours a week.

*Prerequisites or concurrent:
S. E. 151, 152.*

(2) III (Cheek)

156—WATER AND SEWER PLANT OPERATIONS. Standard methods of control for producing best results in the treatment of water and sewage. Practice with miniature plants. Laboratory, four hours a week.

*Prerequisites or concurrent:
S. E. 151, 152.*

(4) III (Cheek)

157—SANITARY ENGINEERING FOR HEALTH OFFICERS. General principles of sanitary engineering including municipal and rural sanitation, water supply, collection of waste, sewers and sewage

disposal, insect control, milk sanitation, principals of heating, lighting and ventilation. Eight hours a week for eight weeks. Lectures, recitations, field trips

(2) IV (Cheek)

158—SANITARY ENGINEERING DESIGN. For students majoring in Sanitary Engineering. Complete design and layout of a water plant, distribution system, storm and sanitary sewer and sewage disposal plant. Drawing room, twelve hours a week.

Prerequisites or concurrent:

(4) III (Cheek)

San. Eng. 151, 152.

182—SANITATION. Presented from an engineering view point. Municipal and rural sanitation, treatment and protection of water supplies, disposal of refuse and sewage, control of insects, food supply, plumbing and ventilation. Lectures and recitations, three hours a week.

Prerequisite: Bact. 57.

(3) III (Cheek)

252a, b—SANITARY ENGINEERING. Advanced course in sewer design, construction and maintenance. Design, maintenance and operation of sewage disposal plants. Water supply and water works design, construction and maintenance. (Courses in water analysis and bacteriology should be taken in connection with this course.) Class work, five hours; laboratory, ten hours a week.

(9) II, III (Cheek)

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. Recitation, three hours, laboratory, three hours a week.

Prerequisite: Physics 3b.

(4) I, III (Barnett, Noble)

102—ELECTRICAL MACHINERY (For Metallurgical and Mining Engineers). A study of electric power and its control as applied to mining machinery and metallurgical processes. Recitation three hours a week.

Prerequisite: E. E. 101.

(3) II (Bureau)

105—D. C. CIRCUITS AND MACHINERY. (For Mechanical Engineer.) Subjects studied are batteries, d.c. generators, motors, control apparatus, power transmission, etc. Recitation, 4 hours; laboratory, 6 hours.

Prerequisite: Phys. 3b.

(6) III, IV (Barnett)

106—A. C. CIRCUITS AND MACHINERY. (For Mechanical Engineers.) The fundamental theory of alternating current circuits and apparatus. Includes study of single phase and polyphase genera-

tors, motors, transformers, converters, etc. Recitation, four hours; laboratory, six hours a week.

Prerequisites: E. E. 105;

(6) I, IV (Barnett)

Math. 20b.

107—ELECTRICAL CONTROL. A study of the field of electrical engineering which is concerned with the control of electric equipment. It involves a study of the individual types of contractors, relays, etc., as well as the various circuits with which they are tied together into units for automatic functioning. Recitation, three hours; laboratory, two hours a week.

Prerequisites or concurrent:

(4) IV (Bureau)

E. E. 116, 106 or 101.

108—ELECTRONIC CONTROLS. A study of the application of thermionic and light sensitive tubes to industry in non-communication uses such as the controlling of manufacturing processes and motive equipment, safe-guarding life and property, etc. Recitations, 3 hours; laboratory, 3 hours.

Prerequisites:

(4) II (Romanowitz, Allison)

Elec. Eng. 116; 161.

110a—ELECTRICAL LABORATORY (For Electrical Engineers). An experimental study of electrical circuits and machinery. Laboratory, 2 hours.

Concurrent: *Elec. Eng.* 115.

(1) II (Barnett, Noble)

110b—ELECTRICAL LABORATORY. A continuation of Electrical Engineering 110a. Laboratory, 2 hours.

Concurrent: *Elec. Eng.* 116.

(1) III (Barnett, Noble)

110c—ELECTRICAL LABORATORY. A continuation of *Elec. Eng.* 110b. Laboratory, 2 hours.

(1) IV (Barnett, Noble)

111a—ADVANCED ELECTRICAL LABORATORY. (For Electrical Engineers). Advanced study of electrical machinery with special reference to alternating current apparatus. Laboratory, two two-hour periods a week.

Concurrent: E. E. 117.

(2) I (Bureau)

111b—ADVANCED ELECTRICAL LABORATORY. Continuation of E. E. 111a. Laboratory, three hours a week.

(1) II (Bureau)

111c—ADVANCED ELECTRICAL LABORATORY. A continuation of *Elec. Eng.* 111b. Laboratory, 3 hours.

(1) III (Bureau)

114—ALTERNATING CURRENT CIRCUITS. A mathematical study of electric circuits under the influence of steady state non-

sinusoidal as well as sinusoidal voltages. Vector algebra, Fourier series and symmetrical components as well as graphical methods are used. Recitation, five hours; laboratory, 3 hours.

Prerequisite: E. E. 21. (6) II (Bureau, Noble)

115—DIRECT CURRENT MACHINERY. (For Electrical Engineers). A study of D. C. machinery operation and behavior. Recitation, 3 hours, calculating room and laboratory, 3 hours.

Prerequisites: Elec. Eng. 21, (4) II (Staff)
Math. 20b.

116—ALTERNATING CURRENT MACHINERY. (For Electrical Engineers). A study of A. C. machinery operation and behavior. Recitation, 4 hours, calculating room and laboratory, 3 hours.

Prerequisites: Elec. Eng. 114, 115. (5) III (Staff)

117—ADVANCED ALTERNATING CURRENT MACHINERY. (For Electrical Engineers). Advanced analytical study of A. C. machinery characteristics. Recitation, 5 hours.

Prerequisite: Elec. Eng. 116. (5) IV (Staff)

120—ELECTRIC CIRCUIT ANALYSIS. Application of higher mathematics to the solution of special types of electrical engineering problems. Lectures and recitations, 3 hours a week.

Prerequisites: E. E. 114, (3) III (Bureau, Romanowitz, Allison)
Math. 105a.

123—ELECTRICAL EQUIPMENT PROBLEMS. (For Electrical Engineers). Individual problems related to engineering practice are assigned. The solutions involve economic as well as engineering considerations. A formal written report is required for each assignment. 9 hours.

Prerequisites: Elec. Eng. 116, Math. 105a. (3) I (Barnett, Bureau)

124a—ELECTRICAL DESIGN. D. C. machinery design. 6 hours.
Prerequisite: Elec. Eng. 115. (2) II (Barnett)

124b—ELECTRICAL DESIGN. A. C. Machinery design. 6 hours.
Prerequisite: Elec. Eng. 116. (2) III (Barnett)

135—ELECTRICAL NETWORKS. Fundamentals of networks theory in communication and power circuits. Lectures and recitations, 3 hours; laboratory, 3 hours.

Prerequisites: E. E. 114, (4) I (Bureau, Romanowitz, Allison)
E. E. 120.

136—ILLUMINATION ENGINEERING. A study of light sources and photometry; fundamental principles of illumination as applied to home, public building, and commercial lighting; outdoor lighting. Recitations, 3 hours; laboratory, 2 hours a week.

Prerequisites: Phys. 3b, (4) III (Bureau, Romanowitz)
Math. 20b.

137—ELECTRIC POWER TRANSMISSION AND DISTRIBUTION. A study of the materials and equipment used and the problems involved in the design, building and operation of electrical transmission lines and distribution systems. Recitations, 4 hours a week.

Prerequisite: Elec. Eng. 106 or 101, 116. (4) II (Barnett)

139—TELEPHONY. The theory and practice of modern telephone operation. Lectures and recitations, 4 hours a week.

Prerequisite: E. E. 135. (4) IV (Bureau, Romanowitz)

151a, b, c—SEMINAR. Weekly meeting with the staff for reports and discussion of research and modern trends and practices in electrical engineering. Two hours a week.

(1) II, III, IV (Staff)

152a, b, c.—INDEPENDENT PROBLEMS. (For Electrical Engineers.) A problem, approved by the Head of the Department, forms the background for study and research. Only students, the character of whose previous work justifies it, will be allowed to register for this work.

(2) II, III, IV (Staff)

152d, e, f.—INDEPENDENT PROBLEMS. (For Electrical Engineers.) A problem, approved by the Head of the Department, forms the background for study and research. Only students, the character of whose previous work justifies it, will be allowed to register for this work.

(3) II, III, IV (Staff)

161—RADIO ENGINEERING. Elements of electronic circuits. Electron behavior; thermionic emission; diodes, triodes, tetrodes, pentodes and their characteristics; qualitative performance of tubes in electronic circuits; electronic instruments. Lectures and recitations, 3 hours; laboratory, 3 hours a week.

Prerequisites: E. E. 114. (4) III (Romanowitz, Allison)

162—RADIO ENGINEERING—RECEIVERS. Power supplies, amplifiers, oscillators, detectors and complete receiver circuits. Lectures and recitations, 3 hours; and laboratory, 3 hours a week.

Prerequisite: E. E. 161. (4) I (Romanowitz, Allison)

163—RADIO ENGINEERING—TRANSMITTERS. Transmitter circuits, crystal oscillator, amplitude modulation, frequency modulation, high frequency lines and antenna. Lectures and recitations, 4 hours a week.

Prerequisites: E. E. 162, (4) III (Romanowitz, Allison)
E. E. 135.

164—RADIO ENGINEERING — HIGH FREQUENCY PHENOMENA. Circuit elements; wide band amplifiers; pulse, trigger

and sweep circuits; square wave testing and transient response. Lectures and recitations, 4 hours; laboratory, 3 hours a week.

Prerequisite: E. E. 163.

(5) II (Romanowitz)

165—RADIO ENGINEERING—FUNDAMENTALS OF ELECTRIC WAVES. Equations of plane waves; application of vector analysis in electric and magnetic field theory; introduction to Maxwell's equations. Lectures and recitations, 3 hours a week.

Prerequisites: E. E. 120,

(3) II (Romanowitz)

E. E. 114.

205—ADVANCED INDUCTION MOTOR THEORY. A study of the theory underlying the characteristics of single phase and poly-phase induction motors. Recitation, four hours; laboratory, six hours a week.

(6) (Bureau)

206—ELECTRIC POWER TRANSMISSION. The theory underlying calculation and operation of long distance transmission circuits. Special attention to relay control. Recitation, four hours; laboratory, six hours a week.

(6) (Barnett)

207—ELECTRIC POWER DISTRIBUTION. A study of theory underlying operation and control of various types of distribution circuits. Recitation, four hours; laboratory, six hours a week.

(6) (Barnett)

208—ELECTRIC TRACTION. An advanced study of electric power application to railways, cranes, elevators, etc. Recitation, four hours; drawing room, six hours a week.

(6) (Bureau)

209—TELEPHONE ENGINEERING. An advanced study of the theory and operation of modern telephone exchanges. Layout and design are made to meet different assumed conditions. Recitation, four hours.

(4) (Romanowitz)

210—SYMMETRICAL COMPONENTS. A study of the symmetrical component method of analyzing unbalanced conditions on transmission lines and its use in solving relay applications. Recitation, four hours; laboratory and design, six hours a week.

(6) (Bureau)

226—RADIO ENGINEERING—ULTRA HIGH FREQUENCY. Negative and positive grid oscillators; the magnetron, the klystron ultra high frequency transmission lines and circuit elements. Lectures and recitations, 3 hours; laboratory, 3 hours a week.

Prerequisite: E. E. 164

(4) (Romanowitz)

or equivalent.

227—RADIO ENGINEERING—RADIATION AND PROPAGATION. Basic laws; plane waves, polarization; short antenna fields and radiated energy; finite length antennae; propagated waves. Lectures and recitations, 3 hours a week.

Prerequisite: E. E. 165
or equivalent.

(3) (Romanowitz)

230a, b, c—SPECIAL PROBLEMS IN ELECTRICAL 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 Electrical Engineering. Laboratory, eighteen hours a week.

Prerequisite: Approval of Head of the Department. (9) (Staff)

MECHANICAL ENGINEERING

100a—MACHINE DESIGN (For Mechanical Engineers). Design of machine and structural elements. Lecture two hours; drawing room, six hours a week.

Prerequisites: Eng. Draw. 12, Mech. Eng. 15a, Mech. Eng. 156.

Prerequisite or Concurrent:

Applied Mech. 100.

(4) I, IV (Carter)

100b—MACHINE DESIGN. (For Mechanical Engineers.) Continuation of Mech. Eng. 100a. Individual work on the design and construction of complete machines or structures. Lecture, two hours; drawing room, six hours a week.

(4) I, II (Carter)

101—MECHANICAL ENGINEERING DESIGN. Individual work in the selection of equipment and in the laying out and specifying of power plant, heating, ventilating, air conditioning, plumbing, electric industrial and elevator equipment for buildings. Lecture, 1 hour; drawing room, nine hours a week.

Prerequisites: Mech. Eng. 105, M. E. 107,

M. E. 114, M. E. 104c,

and Ap. Mech. 100.

(4) I, II (Knight)

103—ELEMENTS OF HEAT-POWER ENGINEERING (Intended for civil and mining engineers). Brief general course in heat-power engineering, including elementary principles of thermodynamics and power plant equipment. Recitation, two hours a week.

Prerequisite: Physics 3a.

(3) I (Penrod, Terry)

104a—ENGINEERING THERMODYNAMICS. Fundamental principles of thermodynamics including the application and theory of fluid flow, engines, turbines, air compressors, refrigeration, gaseous mixtures and combustion. Lectures and recitations, three hours a week.

Prerequisites: Phys. 3c, Math. 20b.

(3) (Penrod, Terry)

104b—ENGINEERING THERMODYNAMICS. Continuation of Mech. Eng. 104a. Lectures and recitations, three hours a week.
Prerequisite: Mech. Eng. 104a. (3) (Penrod, Terry)

104c—ENGINEERING THERMODYNAMICS. Continuation of Mech. Eng. 104b. Lectures and recitations, three hours a week.
Prerequisite: Mech. Eng. 104b. (3) (Penrod, Terry)

105—STEAM POWER PLANT EQUIPMENT. Study of the characteristics and use of steam power plant equipment, including steam generators, fuel handling and burning equipment, coal and ash handling, draft producers, dust collectors, smoke abatement, prime movers, generators, air preheaters, economizers, feed water heating and treatment, pumps, continuous blow down and combustion control. Recitation four hours a week.
Prerequisite: Mech. Eng. 104c. (4) I, IV (Terry)

107—FLUID MECHANICS. Covering the statics, kinematics, dynamics and thermodynamics of fluids, both liquids and gases, including the derivation and use of all fundamental formula for flow through orifices, nozzles, pipes, fittings, etc., together with the study of dams, weirs, metering devices, turbines, pumps, the aerodynamics of bodies moving through air and the hydrodynamics of bodies moving through water. Recitation, four hours a week.
Prerequisite: Mech. Eng. 104a. (4) IV (Penrod, Savage)

108—INTERNAL COMBUSTION ENGINES. A study of internal combustion engine cycles and the characteristics and performance of actual engines, valves, gears and materials of construction. Recitation, five hours a week.
Prerequisite: M. E. 104b. (5) II (Meyer)

109—REFRIGERATION. A course which deals with compression and absorption refrigeration machines in which special attention is given to properties of refrigerants, laws and properties of solutions, heat balance, heat exchanges, theory of freezing, food storage, and refrigeration capacity. Lectures and recitations, 5 hours a week.
Prerequisite: Mech. Eng. 104c. (5) (Knight)

110—HEATING AND VENTILATING DESIGN. Brief course for architectural engineers, covering the selection and layout of heating and ventilating equipment. Drawing room six hours a week.
Prerequisite or concurrent: M. E. 116. (2) II

112a—MECHANICAL LABORATORY. Practice in the operation, use, calibration and care of mechanical and industrial test and research instruments and apparatus, followed by a study of the methods used for the determination of certain fundamental coefficients and constants; also a study of the records and results from

operating and test instruments in actual commercial use. Lecture one hour; laboratory three hours a week.

Prerequisite: Mech. Eng. 104a.

(2) I, III (Staff)

112b—MECHANICAL LABORATORY. A continuation of Mech. Eng. 112a. Lecture, one hour; laboratory, three hours a week.

(2) II, IV (Staff)

113a—MECHANICAL LABORATORY. Performance tests on heating, ventilating and power plant equipment. Lecture, one hour; laboratory, three hours a week.

Prerequisite: M. E. 112b.

Prerequisites or concurrent:

(2) I, IV (Staff)

M. E. 105, 106a, 107, 114.

113b—MECHANICAL LABORATORY. A continuation of Mech. Eng. 113a. Lecture, one hour; laboratory, three hours a week.

(2) I, II (Staff)

114a—AIR CONDITIONING, HEATING AND VENTILATING. Theory of air conditioning and the mechanical equipment of buildings. Special attention is given to construction and use of psychrometric charts; heat transmission, heat and cooling load calculations, heating and cooling systems, the gas-fired air conditioner and the heat pump system. Lectures and recitations, five hours a week.

Prerequisite: Mech. Eng. 109.

(5) (Knight)

114b—AIR CONDITIONING, HEATING AND VENTILATING. Continuation of Mech. Eng. 114a and the complete design and layout of a year-round air conditioning system. Lectures and recitations, two hours a week; laboratory, six hours a week.

Prerequisite: Mech. Eng. 114a.

(4) (Knight)

116—ELEMENTARY HEATING, VENTILATING AND AIR CONDITIONING. A course involving elementary heating and ventilating, calculations and descriptions of various types of equipment. Latter part of quarter devoted to a discussion of the basic principles of air conditioning. Recitation, four hours a week.

Prerequisites: Phys. 3a,

(4) II (Knight, Terry)

Junior classification.

121—MACHINE DESIGN. (For Electrical Engineers). Similar to Mech. Eng. 100a with special attention to the mechanical features of electrical machines. Lecture, one hour; drafting room, eight hours a week.

Prerequisites: Eng. Draw. 18, Mech. Eng. 15a;

Prerequisite or concurrent:

(3) I, IV (Carter)

Applied Mech. 100.

122a, b, c—SEMINAR. Studies of current engineering literature and problems; presentation of papers and discussions. All presenta-

tion to be electrically recorded and reproduced and at least one record of each student to be placed in file. Two hours a week.

Prerequisite: Senior classification.

(1) I, II, III, IV (Penrod)

129—ELEMENTS OF HEAT TRANSFER. The transfer of heat by conduction, convection and radiation with special attention given to dimensionless ratios, film theory, heat transfer and pressure drop, and heat exchangers. Lectures and recitations, four hours per week.

Prerequisite: Mech. Eng. 104a.

(4) (Penrod)

130a—APPLIED AERODYNAMICS. Study of the atmosphere, boundary layers, fluid mechanics principles as applied to aerodynamics, wind tunnel weighing systems, circulation theory, basic wing theory, lift and drag, compressibility, performance of propeller-engine and jet-propelled aircraft, thermodynamics principles, and stability and control of the airplane. Lectures and recitations, three hours a week.

Prerequisites: Mech. Eng. 107, Mech. Eng. 104b.

(3) (Savage)

130b—APPLIED AERODYNAMICS. Continuation of Mech. Eng. 130a. Lectures and recitations, three hours a week.

Prerequisite: Mech. Eng. 130a.

(3) (Savage)

131a—AIRPLANE DESIGN. Design of a small light plane including study of basic design problems, aerodynamic factors in design, stress analysis of structures, aircraft materials, control systems, weight and balance control, engine installations, inboard profile, and cost items. Lectures and recitations, three hours a week.

Prerequisites: Mech. Eng. 100a.

(3) (Savage)

Mech. Eng. 104b.

131b—AIRPLANE DESIGN. Continuation of Mech. Eng. 131a. Lectures and recitations, three hours a week.

Prerequisite: Mech. Eng. 131a.

(3) (Savage)

131c—AIRPLANE DESIGN. Continuation of Mech. Eng. 131b. Drawing room, six hours a week.

Prerequisite: Mech. Eng. 131b.

(3) (Savage)

132—AERODYNAMICS LABORATORY. Study of basic wind tunnel design, smoke flow over plates and bodies, wind tunnel support systems, velocity distribution in tunnel working sections, drag of various objects, and pressure distribution over airfoils at various angles of attack. A complete wind tunnel analysis of a scale model airplane will be done in order to determine lift, drag, pitching moment, rolling moment, yawing moment, and side force data. Lecture, one hour; laboratory, four hours a week.

Prerequisites: Mech. Eng. 130b, Mech. Eng. 107.

(3) (Savage)

201a—AUTOMOTIVE ENGINEERING. An advanced course in the essentials of motor vehicle design, construction and operation. Drafting room, laboratory and lectures by appointment.

(9) (Meyer)

201b—AUTOMOTIVE ENGINEERING. Continuation of 201a.

(9) (Meyer)

202a, b—POWER PLANT ENGINEERING. Advanced work in the design, selection, layout and operation of heat-power plant equipment.

(9) (Terry)

203a, b—HEATING, VENTILATING AND AIR CONDITIONING. Advanced work in the design, selection, layout and operation of heating, ventilating and air conditioning equipment.

(9) (Knight)

204a, b—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.

(9) (Meyer, Carter)

210a, b, c—SPECIAL PROBLEMS IN MECHANICAL 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 Mechanical Engineering. Laboratory, eighteen hours a week.

Prerequisite: Approval of

(9) (Penrod, Mayer, Carter)

Head of the Department.

METALLURGICAL ENGINEERING

120—ASSAYING. This course comprises the determination of the constituents of ores and metallurgical products by means of fire methods, primary attention being given to the determination of the precious metals. Laboratory, six hours a week.

Prerequisites: Chem. 21b, Met. 27.

(2) (Staff)

121—FUEL AND METALLURGICAL LABORATORY. This course comprises the analytical determination of the constituents of ores and metallurgical products by both wet and dry methods as well as the determinative methods utilized in the analysis of coals and other fuels. Laboratory, six hours a week.

Prerequisites: Chem. 21b, Met. 27.

(2) III (Crouse)

128—METALLURGY OF NON-FERROUS METALS. This course comprises a study of the principles and processes employed in the production and preparation for use of copper, lead, aluminum and other non-ferrous metals such as gold, silver, zinc, etc., and of

their respective alloys. Lectures and recitations, four hours a week.
Prerequisite: Met. 27. (4) II (Crouse)

132a—METALLURGICAL CALCULATIONS. This course comprises a study of the calculations involved in the practical application of the principles to general metallurgy, as well as those used in both ferrous and non-ferrous metallurgical practice. Recitation and problems, four hours a week.
Prerequisites: Chem. 21b; Met. 29 and 128. (4) II (Crouse)

132b—METALLURGICAL CALCULATIONS. A continuation of Met. Eng. 132a. Recitation and problems, four hours a week.
(4) III (Crouse)

140—THE SCIENCE OF METALS. This is a first course in physical metallurgy and involves a consideration of the correlation of the structures of metals and alloys to their physical properties together with the effects of mechanical work and heat. Lecture, three hours; laboratory, three hours a week.
Prerequisites: Physics 3c; Chem. 21b; Met. 29. (4) I, III
(Garhard, Coffinberry)

141—ALLOY STEELS. The thermal behavior of low and high alloy steels is discussed on the basis of each particular phase diagram. The sub-critical transformation of austenite in alloy steels and the physical properties of the products of this type of decomposition of austenite are reviewed. Martensite and intermediate transformations are treated. The heat treatment of complex alloy steels such as the high speed and high alloy die steels receive particular emphasis. Lectures and recitation, three hours a week.
Prerequisite: Met. 37 or Met. 140. (3) III (Coffinberry)

142a, b—HEAT TREATMENT. This course comprises a study of the methods used and the principles involved in the heat treatment of metals and alloys. Lectures and recitation, two hours a week; laboratory, three hours a week.
Prerequisites: Met. 60, 140. (3) I, II (Coffinberry)

143a, b—PHYSICS OF METALS. The study of the laws governing the formation of alloys. Subjects discussed are atomic structures of metals and alloys, atomic forces, superlattices, ferro-magnetism, perfect and imperfect crystals, corrosion, superconductivity, the physical properties of metals as a function of periodic and electrochemical position, diffusion, free energy, Hume-Rothery and other rules. In addition the course entails the application in the X-ray laboratory of the work taken in the class room together with the development of an operating technique in radiography as applied to metals and alloys. Lectures and recitation, three hours a week; laboratory three hours a week.
Prerequisites: Phys. 119, 123b, Met. 140. (4) I, II (Coffinberry)

144—NON-FERROUS METALOGRAPHY. The physical properties of the non-ferrous metals and the interpretation of the properties obtained on the basis of the phase diagram is the prime objective of this course. The light alloys and the age hardening theory are emphasized. Bearing metals and the bronzes receive special attention. Lectures and recitation, two hours; laboratory, three hours a week.

Prerequisite: Met. 140.

(3) III (Coffinberry)

150—INDUSTRIAL MINERAL PREPARATION AND USES. This course comprises a study of the more common non-metallic substances utilized in industry such as carbon, lime, clay, nitrogen, etc. Lectures and recitation, three hours a week.

Prerequisite: Met. 27.

(3) III (Beebe)

164—ELEMENTS OF LOW TEMPERATURE CARBONIZATION. An elementary course in the study of the principle involved in the low temperature carbonization of coals and other carbonaceous materials, including hydrogenation. Lectures and recitation, three hours a week, with assigned reference reading.

Prerequisites: Phys. 123b, Chem. 140c.

(3) (Crouse)

166a—EXTRACTIVE METALLURGY. Study of the principles and mechanisms applied to the practices of gravity concentration, flotation, and related processes, in the preparation of mine products for market, including discussion of the principles of plant design, with reference reading planned to keep the student informed of current technological development. Recitation and lectures, five hours a week, with reference readings and problems.

Prerequisites: Chem. 1b, Phys. 3b,
Math. 20a, Met. 27.

(5) I (Carter)

166b—EXTRACTIVE METALLURGY. Continuation of Metallurgy 166a. Recitation and lectures, four hours a week, with reference reading and problems.

(4) II (Carter)

Prerequisite: Met. 166a.

167—EXTRACTIVE METALLURGY PLANT PRACTICE. This is a course in the operation of plants studied in Metallurgy 166a, 166b. Laboratory, six hours a week.

Prerequisite: Met. 166b.

(2) III (Carter)

175a, b, c—SEMINAR. This course includes general round table discussions of various metallurgical principles and problems, the preparation and delivery of papers and reports on metallurgical subjects, extemporaneous speaking and the briefing of technical books and articles in the current literature. Two hours a week.

Prerequisite: Nine quarters in
Metallurgical Eng.

(1) I, II, III (Staff)

205—HEAT TREATMENT OF METALS AND ALLOYS. This is an advanced course in which the various factors involved in the heat treatment of metals and alloys are considered with special emphasis upon the particular metal or alloy on which the student wishes to specialize. Reference reading and laboratory work are emphasized. Lectures and recitations three hours a week; laboratory twelve hours a week. (9) (Crouse, Coffinberry)

207—TECHNOLOGY OF ALLOYS. This course comprises a study of the principles and practices used in the production of alloys of various kinds with special stress upon any particular group of alloys that the student may choose. Reference reading and laboratory work are emphasized. Lectures and recitations three hours a week; laboratory twelve hours a week. (9) (Crouse)

208—ADVANCED METALLOGRAPHY. This course comprises a detailed study of the structure of metals and alloys together with their preparation for examination under the microscope. In addition instruction is given in the taking of microphotographs. Reference reading and laboratory work are emphasized. Lectures and recitation three hours a week; laboratory twelve hours a week. (9) (Crouse, Coffinberry)

209—ADVANCED ORE DRESSING. This course comprises a study of the technique of ore dressing, plant design and gives an opportunity for original research in concentration problems. Lectures and recitations three hours a week; laboratory twelve hours a week. (9) (Carter)

210—TECHNOLOGY OF LOW TEMPERATURE CARBONIZATION. This course comprises a detailed study of the principles and practices employed in the low temperature carbonization of carbonaceous materials such as bituminous and cannel coals. Reference reading and laboratory work are emphasized. Lectures and recitations three hours a week; laboratory twelve hours a week.

Prerequisite: Sufficient background in (9) (Crouse)

*Physics, Chemistry and Metallurgy,
this background to be determined by
the Head of the Department after
consultation with the student.*

211—ELEMENTS OF OIL SHALE ENGINEERING. This course comprises an elementary study of the destructive distillation of oil shales for the production of oil, gas and by-products together with the history of the oil shale industry and the economic factors upon which the future development of the industry depends. Lectures and recitations three hours a week.

Prerequisites: A sufficient background of (3) (Crouse)

Physics, Chemistry and Geology.

212—OIL SHALE TECHNOLOGY. This course involves a detailed study of the principles employed and the methods used in the production of oil from shale. Reference reading and laboratory work are emphasized. It is desirable that the student have some knowledge of physical and organic chemistry. Lectures and recitations three hours a week; laboratory twelve hours a week.

Prerequisites: Sufficient background in Chemistry and Physics. (9) (Crouse)

213—X-RAY METALLOGRAPHY. Radiography of castings and welds. The atomic structure of metals and alloys will be determined. Laue, Debye, focusing, rotating crystal, Phragmen and Sacks type diffraction cameras will be studied; also stereographic and gnomonic projection, pole figures, fibre patterns, crystal structure and Comen's analytical method of calculating lattice parameters. Radiographs will be made and interpreted. Lectures and recitations three hours; laboratory six hours a week.

Prerequisite: Met. 143b. (6) (Coffinberry)

214—THE METALLIC STATE. Fibre patterns, stereographic projection and goniometry. Crystal chemistry and metallic crystals. Quantum mechanical concepts for isolated atoms are applied to interacting atoms, leading to methods of calculating energies and forces binding atoms together in crystals. Lectures and recitations, three hours a week.

Prerequisite: Met. 143b. (3) (Coffinberry)

215—ADVANCED ALLOY STEELS. An advanced course in alloy steels including stainless and heat resisting steels, structural steels and alloy cast irons. Lectures and recitations, three hours; laboratory, three hours a week.

(4) (Coffinberry)

216a—THE PHYSICAL CHEMISTRY OF STEEL MAKING. A study of the kinetics and equilibria involved in steel making processes. The reactions of the open hearth furnace are considered in terms of the free energies of substances at elevated temperatures and the activities of components in the metal, slag and gaseous phases. Special attention is given to slag constitution, slag control, and the effects of alloying and deoxidizing additions to the liquid metal. The influences of melting, refining and deoxidizing practices on the properties of the finished steel are also emphasized. Lectures and recitations, three hours a week.

(3) (Coffinberry)

216b—THE PHYSICAL CHEMISTRY OF STEEL MAKING. A continuation of Met. Eng. 216a. Lectures and recitations, three hours a week.

Prerequisite: Met. Eng. 216a. (3) (Coffinberry)

216c—THE PHYSICAL CHEMISTRY OF STEEL MAKING. A continuation of Met. Eng. 216b with the addition of laboratory work consisting of the production and testing of small experimental heats of both acid and basic electric furnace steels. Lectures and recitations, three hours; laboratory, three hours a week.

Prerequisite: Met. Eng. 216b.

(4) (Coffinberry)

217—THE MICROSCOPY OF SLAGS AND REFRACTORIES. The identification and study of phases occurring in slags, ceramic bodies, and other non-opaque materials of metallurgy through the use of the petrographic microscope. Emphasis is placed on the interpretation of microstructural features as indicators of high temperature reaction tendencies among silicate and oxide phases. Phase equilibrium relationships in silicate and oxide systems are considered and some attention is given to phase identification by x-ray diffraction. Lectures and recitations, two hours; laboratory, six hours a week.

(4) (Coffinberry)

218—DIFFUSION AND HEAT FLOW IN METALS. The differential equations of Fick and Fourier are applied to diffusion in the homogenization of alloys and in solid state transformations, to the heating of metals by furnace and induction methods, and to the cooling of metals in heat treatment, welding and casting. Radiation and convection, in addition to conduction, are given consideration as modes of heat transfer involved in the principles of furnace design. Lectures and recitations, three hours a week.

(3) (Coffinberry)

230a-b-c-d—RESEARCH IN X-RAY METALLOGRAPHY. Research problems in X-Ray metallography either diffraction or radiographic. Lectures and recitation, 3 hours a week; laboratory 12 hours a week.

Prerequisite or concurrent: Met. 213.

(9) (Coffinberry)

240a, b, c—SPECIAL PROBLEMS IN METALLURGICAL 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 Metallurgical Engineering. Laboratory, eighteen hours a week.

Prerequisite: Approval of Head of the Department

(9)

MINING ENGINEERING

126a—DEVELOPMENT OF MINES. Includes study of the origin of mineral deposits in general, as they concern the engineering procedures involved in the location and exploration of mineral deposits and of the engineering processes involved in the development of prospects into mines. Recitations five hours a week; reference reading and assigned reports.

Prerequisites: Chem. 2b, Phys. 3b, Geol. 12b.

(5) III (Carter)

126b—DEVELOPMENT OF MINES. Continuation of Mining 126a. Recitations three hours a week, with assigned reference reading and reports.

Prerequisite: Min. 126a. (3) IV (2nd half) (Carter)

127a—MINING UNDERGROUND. Includes a study of methods of excavation and support, and underground working and development faces in all types of underground mining operations. Recitations and lectures four hours a week with assigned reference reading.

Prerequisite: Min. 126a. (4) II (Carter)

127b—MINING UNDERGROUND. Continuation of Mining 127a. Recitations and lectures three hours a week with assigned reference reading.

Prerequisite: Min. 127a. (3) III (Carter)

128—MINING AT THE SURFACE. Study of the methods of working placer deposits, open-pit mines, and similar surfacial mining operations. Lectures and recitations three hours a week with assigned reference reading.

Prerequisite: Min. 126a. (3) II (Carter)

129a—MINE VENTILATION AND DRAINAGE. Includes study of the principles applied in the conditioning of underground mine atmospheres, the drainage of underground mine workings and the problems encountered in the handling of emergencies, such as fires and floods in underground working. Recitations and lectures four hours a week.

Prerequisite: Min. 126a. (4) I (Carter)

129b—MINE VENTILATION AND DRAINAGE. Continuation of Mining 129a. Recitations and assigned reference reading three hours a week.

Prerequisite: Min. 129a. (3) II (Carter)

130—MINE ADMINISTRATION. A study of the engineering aspects of mine administration and management, of the technology and mechanization studies of mining and market preparation processes, and practice in the fundamentals of mine plant design. Recitations and lectures with assigned reference reading five hours a week.

Prerequisites: Min. 126a, Min. 126b. (5) III (Carter)

140—UNDERGROUND SURVEYING. A study of the methods used in underground surveying and mapping, including underground field practice. Lectures and recitations, two hours; field practice, three hours a week.

Prerequisite: Civ. Eng. 12. (3) (Carter)

175a, b, c—SEMINAR. This course includes general round table discussions of various mining principles and problems, the prepara-

tion 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 a week.

Prerequisite: Nine quarters in Mining Eng. (1) I, II, III (Staff)

203—MINE ORGANIZATION. This course comprises a detailed study of the structure and function of a mining enterprise from both the financial and the engineering standpoints. Lectures and recitations five hours a week. (5) (Carter)

206—EXPLOSIVE ENGINEERING. This course comprises a study of the principles involved in the use of explosives in large scale mining and quarrying practice. Lectures and recitations three hours a week. (3) (Carter)

207—ADVANCED PROSPECTING. This course comprises a detailed study of the principles involved in the geophysical investigation of the minerals of the earth's crust. Lectures and recitations three hours a week. (3) (Carter)

208—COAL DUST INVESTIGATION. This course is essentially research in the design and utilization of a laboratory scale gallery for the investigation of the explosive qualities of native bituminous coals. Laboratory eighteen hours a week. (6) (Carter)

209a—ADVANCED MINE ENGINEERING. This course comprises a detailed study of the procedure and methods used in collecting and recording data and engineering information involved in the systematic development and exploitation of a mining property. Lectures and recitations three hours a week; drawing and mapping six hours a week. (5) (Carter)

209b—ADVANCED MINE ENGINEERING. A continuation of Mining 209a. Lectures and recitation, three hours; drawing and mapping, six hours a week. (5) (Carter)

220a, b, c—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, eighteen hours a week.

Prerequisite: Approval of Head of the Department (9) (Staff)

VIII. FINE ARTS

ART

As prerequisite to the master's degree, the Department of Art requires preliminary work in art equivalent to that required of its majors in art. In general this means the completion of an undergraduate sequence of six to eight courses in drawing and painting or design balanced by from four to six courses in the history of art, and a reading knowledge of French or German. Graduate work for the master's degree may emphasize technical study in the fields of painting or design or non-technical study in the history of art or the criticism of art. In either case a thesis is required.

The Department is housed in a modern building with special equipment for the study of art. Studios for the practical work are designed to meet exacting professional standards. An art library adjoins the class rooms; there are also extensive collections of photographs, color reproductions, and prints. A picture gallery provides for the study of original works of art.

116a-c—PRINT MAKING. Etching, lithography, woodcut, stencil (color). Technical instruction in executing original compositions in graphic mediums. Open only to advanced students upon approval of instructor.

(4) I, II, III (Amyx)

117a-f—INDEPENDENT WORK: Painting, Print Making. Individual research and experimental work in technical and theoretical problems of drawing and painting, print-making, etc. Each quarter's work is subject to review by the staff. Open only to advanced students upon approval of Department Head.

(4) I, II, III (Staff)

119a-f—INDEPENDENT WORK: Design, Construction. Individual research and experimental work in technical and theoretical problems of design in materials, design for decoration, interior design, industrial design, commercial design, construction, color and light. Each quarter's work is subject to review by the staff. Open only to advanced students upon approval of the Department Head.

(4) I, II, III (Staff)

121a-f—INDEPENDENT WORK: History and Criticism. Individual research, study and critical writing in the history and criticism of art. Studies in collaboration with other humanistic disciplines. Each quarter's work is subject to review by the staff. Open only to advanced students upon approval of Department Head.

(4) I, II, III (Staff)

Note: The Independent Work courses provide for the student of special interests and abilities and enables him to supplement the work of the following regularly scheduled courses.

138—THE NORTHERN RENAISSANCE. The arts of Northern Europe through the sixteenth century; Flemish, French, German and English Schools. The Northern art forms, analyses of style; study of individual masters. Illustrated lectures and reports.

(3) III (Rannells)

140—RENAISSANCE ART. The arts of humanism in Renaissance Italy through the sixteenth century. Renaissance "Form"; analyses of style; study of individual masters. Illustrated lectures; reports.

(4) I (Rannells)

141—BAROQUE ART. The arts of the Reformation and the Counter-Reformation in Europe through the seventeenth century. Baroque "space"; analyses of style; study of individual masters. Illustrated lectures; reports.

(4) II (Rannells)

142—MODERN ART. The arts in Europe and America through the eighteenth and nineteenth centuries. Consideration of social changes and scientific developments in relation to art; history and aesthetics; style revivals; individual artists. Illustrated lectures; reports.

(4) I (Rannells)

143—CONTEMPORARY ART. Studies in the arts of the twentieth century. Surveys and analyses. The relation of art to contemporary life. Space and Time in modern art. The evolution of modern forms in architecture, sculpture, painting and design; developments in photography, the cinema, city planning, etc. Individual artists and their work. Lectures, conferences and reports. *Prerequisite: 142.*

(4) II (Rannells)

147—ART IN AMERICA. American architecture, sculpture, painting, illustration, handicrafts, etc., from colonial times to the present. Illustrated lectures; critical reports.

Prerequisite: 142.

(3) III (Rannells)

151—CRITICISM OF ART. Analyses, interpretations, evaluations. Specific arts, periods of art and styles of art are examined in the light of historical modes of criticism. Problems in criticism of contemporary art. Discussions and reports. For advanced students. *Prerequisites: Advanced studio courses*

and 142, 143.

(4) III (Amyx)

157—ART IN SECONDARY SCHOOLS. Art for teachers in the secondary schools. Problems of definition and interpretation; evalua-

tion of visual training; the correlation of art with other subjects. Sources for art; original works, facsimile reproductions, art, literature, etc. Lectures, conferences and reports.

(4) IV (Rannells)

165a-c—ADVANCED PAINTING. Preparation of grounds for panel pictures: gesso, chalk, half-chalk, oil grounds. Execution of pictures in tempera, oil and mixed techniques. Twelve studio hours a week.

(4) I, II, III, IV

Prerequisites: 63a, 65c.

(Amyx, Barnhart)

MUSIC

The Department of Music requires, as prerequisite for the Master's degree, the equivalent of that required for the A. B. or B. S. Degree with a major in music. Students possessing a Bachelor's degree in a field other than music may qualify as a candidate for the Master of Arts Degree with a major in music after completing the following undergraduate courses in music at an accredited institution:

1. Elementary Harmony, Sightsinging and Dictation12 quarter hours
2. Advanced Harmony, Sightsinging and Dictation12 quarter hours
3. Instrumentation and Conducting, or Choral Conducting 3 quarter hours
4. Form and Analysis..... 6 quarter hours
5. Counterpoint 6 quarter hours
6. History of Music 8 quarter hours

NOTE.—Students, presenting credits in the above courses from an institution which is not accredited, are required to take a special examination in these courses.

A reading knowledge of one modern foreign language is required of all candidates for the Master of Arts Degree. The language to be selected shall be either French or German, except in the case of a vocal major, when Italian is preferred.

Thesis

The candidate may choose as a subject for a thesis an approved research problem in the field of music education.

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.

(3) I, II, III, IV (Sokol)

111a—RESEARCH PROBLEMS IN MUSIC. A research course in some phase of music other than history or pedagogy of music theory. The student will confer with the instructor whenever either or both of them deem it advisable.

(3) I, II, III, IV (Capurso)

111b—RESEARCH PROBLEMS IN MUSIC. Continuation of 111a. This course permits research in some phase of music which may or may not lead to the master's degree.

(3) I, II, III, IV (Capurso)

200a, b—CREATIVE WORK IN HOMOPHONIC FORMS OF COMPOSITION. A detailed study of the structure of the theme and variations, the rondo, and the sonata-allegro. Analysis of works of the masters is supplemented by original composition in the various forms.

Prerequisites: Music 34c and 13b.

(3) Offered according to the demand.

201a, b—CREATIVE WORK IN CONTRAPUNTAL FORMS OF COMPOSITION. A detailed study of the structure of the chorale, the motet, the canon, the invention, and the fugue. Analysis of works of the masters is supplemented by original compositions in these forms.

Prerequisites: Music 12b and 34c.

(3) Offered according to the demand.

203—CHORAL LITERATURE AND TECHNIQUE. An opportunity to study the world's best choral literature and remedial work along the lines of choral presentation; interpretation as influenced by harmonic and melodic structure, vowel production, tone quality, tempi, traditions, program building, etc.

(3) III, IV (Lewis)

204—ADVANCED BAND TECHNIQUE. An advanced course in band technique with concentration on band organization and materials, the technique of band conducting, and general preparation of band instrumentations for balance, the study of transposition of band repertoire, and an intensive study in the field of band arranging.

(3) III, IV (Prindl)

208a-d—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) III, IV (Capurso)

210—BAROQUE MUSIC. An intensive study of the baroque period beginning with the close of the Renaissance and culminating with Handel and Bach. It considers the underlying religious, philosophic, social, and scientific influences of that era and their effect upon the forms and style of music.

Prerequisites: Music 19a, b or 20 a, b.

(3) Offered according to the demand (Capurso)

211—THE CLASSIC AND ROMANTIC PERIODS. An intensive study of keyboard compositions, chamber music, and early orchestra

In addition to the foregoing curriculum, a thesis consisting of an approved problem in the field of Music Education will be required.

A student, wishing to complete the degree requirements on a fifty-four hour basis without a thesis, must select courses at the "200 level" in the amount of twenty-seven 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, open only to advanced students, will consider problems in teaching, supervising, organizing, and leading public school and community activities. Students in service will have an opportunity to bring problems from their own school or community situation; and, when possible, the instructor will visit them in the field. Projects, demonstrations, reading, and discussion.

(3) (Lewis)

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) IV (Capurso, Lewis)

Ed. 253—INDEPENDENT WORK IN MUSIC EDUCATION. This course is designed for graduate students who undertake research problems in music education and is to be conducted in regular consultation with the instructor.

(3) IV (Capurso, Lewis)

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.

101a, b—CONTRACTS I and II. Williston's Cases (4th edition). Formation, parties, consideration, formalities, contracts for the benefit of third persons, assignments, joint obligations, conditions—express and implied, impossibility.

(5) I; (4) II (Murray)

102a, b, c—TORTS I, II, III. Thurston and Seavey's Cases (3rd edition). Breach of legal duty, causation, duty of care, contributory negligence, care in the use or occupation of land, extra-hazardous occupations, joint torts, deceit, defamation, slander, libel, privilege, malicious prosecution, interference with social and business relations, inducing breaches of duty, unfair competition, strikes, boycotts, and business combinations.

(3) I; (3) II; (3) III (Evans)

103—PROPERTY I. Roberts' Cases on Personal Property. Personal Property: possession, the nature and rights of possession, bona fide purchase, purchase by judicial sale, gifts, loss by surrender of possession, assignability, conversion, acts constituting conversion.

(3) I (Randall)

104—PROPERTY II. Warren's Cases on Real Property. Real Property: estates, common law method of creating and conveying estates, Statute of Uses, rights incident to the ownership of land, fixtures, easements, waste, emblements, licenses and covenants running with the land.

(3) II (Randall)

105—AGENCY. Steffen's Cases. Nature of the relation, competency of parties, appointment, delegation of authority, liabilities of principal and of agent, ratification, undisclosed principal, termination.

(3) III (Murray)

107a, b—CRIMINAL LAW AND PROCEDURE. Hall and Glueck's Cases on Criminal Law. Keedy's Cases on Criminal Procedure. Nature of the crime problem, the theory of punishment, procedure, characteristics of particular crimes.

(3) I; (3) III (Moreland)

121a, b—EQUITY I and II. Cook's Cases (3rd edition). Basis of equity jurisdiction, specific performance of contracts, reformation,

reexecution, rescission and cancellation, injunctions in relation to torts, bills of peace, quia timet, interpleaders, position of equity in the legal system.

(4) I; (4) II (Moreland)

122—PROPERTY III. Martin's Cases. Titles and Conveyancing: adverse possession, prescription, accretion, execution and delivery of deeds, boundaries, exception and reservation, easements by implication, covenants of title, estoppel, priorities.

(3) III (Murray)

123—NEGOTIABLE INSTRUMENTS. Britton's Cases on Bills and Notes. Formal requisites of negotiability, acceptance, delivery, endorsement, rights and duties of holder, liability of maker, acceptor, drawer and endorser

(4) I (Murray)

141—PARTNERSHIP. Crane and Magruder's Cases. Partnership distinguished from other forms of business associations; partnership by contract and by estoppel; ownership and transfer of property; powers and obligations of partners; rights and remedies of creditors; termination of partnership.

(2½) III (Murray)

142—INDUSTRIAL RELATIONS. Albertsworth's Cases. Relations between employer and employee, the common law background; Employers' Liability Acts and Safety Regulations; Workmen's Compensation. During the latter half of the course a special study is made of the Kentucky Workmen's Compensation Act and Kentucky cases relating thereto.

(2½) IV (Moreland)

145—INSURANCE. Goble's Cases. Insurable interests, the contract, concealment, representations and warranties, implied conditions, waiver and estoppel, construction.

(3) I (Murray)

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, benefits received without contracts.

(3) II (Murray)

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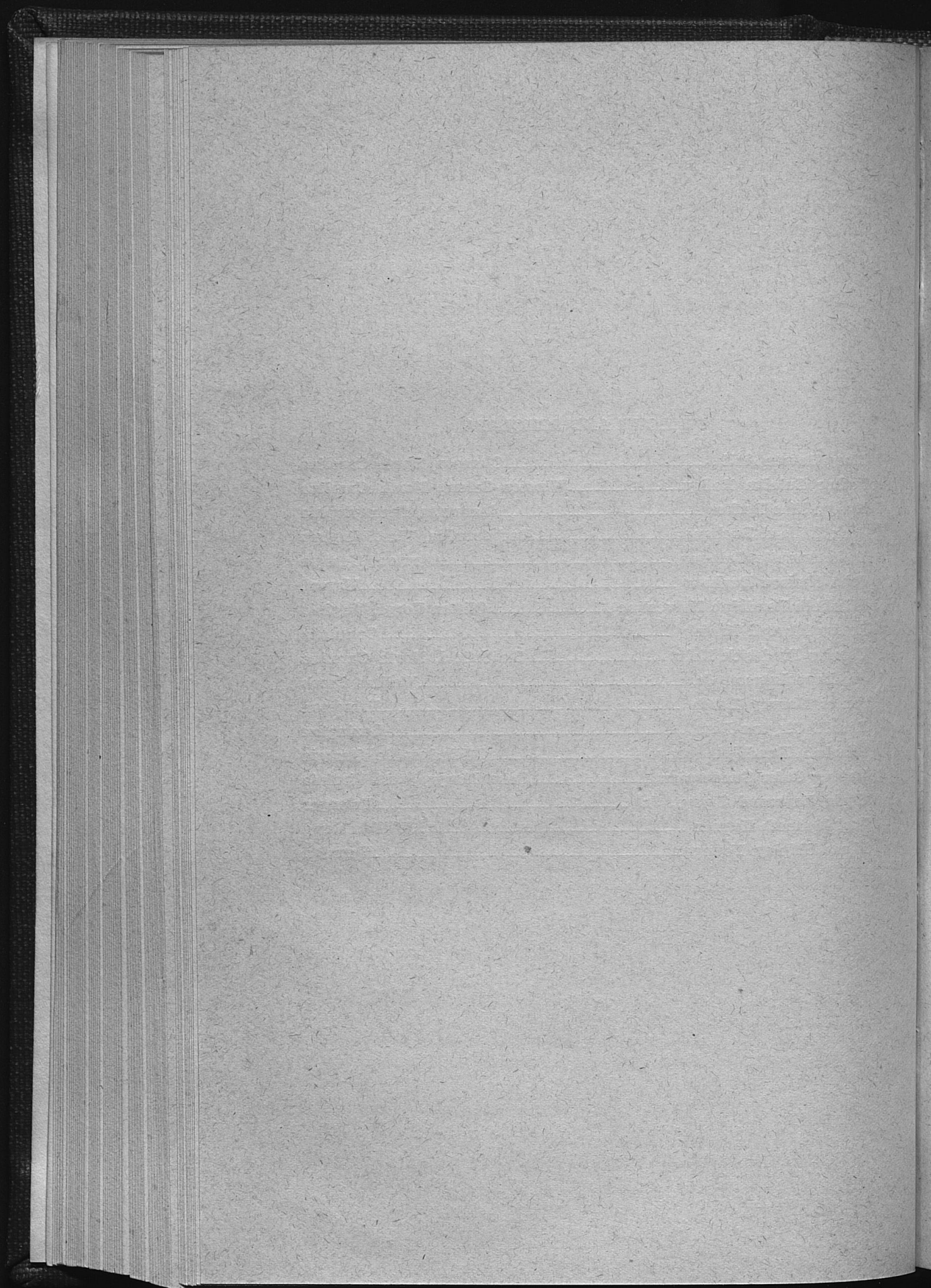
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