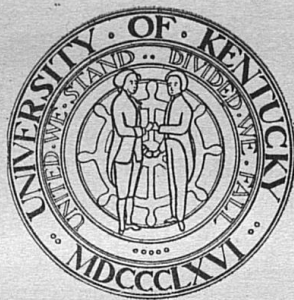# Bulletin

University of Kentucky

Graduate School

1926-1927

June 1926

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THE GRADUATE SCHOOL

WILLIAM D. FUNKHOUSER, A. M., Ph. D., Dean

INTRODUCTORY STATEMENT

Graduate work is offered in all colleges in the University. Approximately three hundred courses are listed in the catalogue, 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 Agriculture, Master of Science in Home Economics, Civil Engineer, Mechanical Engineer, Electrical Engineer, Metallurgical Engineer, Mining Engineer.

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 only attains full graduate status 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.

REGISTRATION

The first step in the procedure for admission to the Graduate School is the filing of a formal application with the Registrar on a form prepared for that 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 catalogue, which have numbers above 100, may be counted as credit towards a graduate degree. A grade of D in a course will not be given graduate credit.

FEES

Registration and laboratory fees are the same as for undergraduate students in the college in which the major work is done.

In addition, a fee of two dollars is required for defraying the expenses incidental to the binding of the thesis. This fee must be paid to the Business Agent of the University before the degree is granted.

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

Students having completed the equivalent of an A. B. or B. S. degree from an accredited liberal arts college or a standard teachers' college, may become candidates for the degree of master of arts or master of science.

THE AMOUNT OF WORK required is twenty-four credits exclusive of the thesis. The twenty-four credits may not include credits received in a thesis course. All the work may be done in one field, but it should preferably be done in a major subject and one or two minors. At least twelve credits must be taken in major courses.

RESIDENCE. One Academic year (36 weeks) is required in residence. This may be fulfilled by any combination of regular semester or summer school sessions which total the required number of weeks. This does not mean that the work prescribed for each individual student can always be completed in one year. Inadequate preparation, or assistance in departments very frequently makes a longer period necessary. Part time work during a regular semester is evaluated on the basis of the amount of work carried.

The transfer of acceptable graduate credits or other work done *in absentia*, such as the writing of a thesis under the direction of the major professor, can not reduce the standard residence requirement.

THESIS. A thesis is required of all candidates for a master's degree. Two typewritten copies of the completed thesis must be pre-

sented not later than three weeks before the time 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.

EXAMINATIONS of 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 semester. 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 was 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.

MASTER OF SCIENCE IN AGRICULTURE OR IN HOME ECONOMICS

Students holding a bachelor's degree from a standard agricultural college may obtain a Master of Science in Agriculture or a Master of Science in Home Economics by completing a full year of residence, which is understood to be class work amounting to twenty-four credits, exclusive of the thesis. The work is prescribed by the major professor with the approval of the Dean. The procedure concerning oral examinations and the presentation of the thesis is the same for the M. A. and M. S. degrees.

REQUIREMENTS FOR THE DEGREES IN ENGINEERING. C. E., CIVIL ENGINEERING; E. E., ELECTRICAL ENGINEERING; M. E., MECHANICAL ENGINEERING; MET. E., METALLURGICAL ENGINEERING; E. M. MINING ENGINEERING.

Any of these advanced engineering degrees may be obtained by doing *one year's work in residence* in the College of Engineering at this University, provided the student holds a bachelor of science degree from an engineering college of recognized standing. The course of study should be arranged in consultation with the head of the department in which the student expects to take his major work and must have the approval of the Dean of the College of Engineering and the Dean of the Graduate School. The student must pass an examination and present an acceptable thesis.

The degrees of M. E. and E. E. may also be obtained for work done *in absentia* three or more years after receiving the degree of bachelor of science in engineering, providing this time has been spent in practical engineering work and an acceptable thesis is presented. At least one year's notice must be given the Dean of the Graduate School that graduate work is being done, and such work must have his approval and that of the major professor under whose supervision the thesis is prepared.

The fees for the degree obtained *in absentia* are $15.00 registration fee, $15.00 ten days before the degree is granted and $2.00 for binding the thesis.

FELLOWSHIPS AND SCHOLARSHIPS

For the encouragement of reseach and scholarship the following fellowships and scholarships have been established:

Ten University scholarships with a stipend of $200.00 each.

Five University fellowships with a stipend of $400.00 each.

One registrar's fellowship with a stipend of $500.00.

Scholars and fellows will be expected to devote their whole time to graduate work, and no teaching or other departmental work may be required of them. Students employed as assistants in departments should as a rule take two years to satisfy all requirements.

Fellowships and scholarships are open to those who already hold, or will receive at the close of the academic year, a bachelor's degree from any college or university of good standing, provided the student has shown some special aptitude for the line of work he desires to pursue.

The primary object of these appointments is to stimulate research and not to give pecuniary aid. No departmental duties of any kind will be required of fellows and scholars. Candidates for the awards must be graduates of standard colleges or universities and must show evidence of high scholarship and fitness for graduate study. No student should apply for the award who does not cherish a real and earnest desire to do research work. The appointments are made for one year only but may be renewed if it can be satisfactorily shown that the prosecution of research undertaken should continue.

Forms for making application may be secured from the Dean of the Graduate School, University of Kentucky, Lexington, Kentucky. All applications should be on file not later than the 15th of April.

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 amount of credit he is to receive for work already done will be determined at the time he applies for admission to candidacy for the degree.

THE GRADUATE CLUB

All graduate students are members of the Graduate Club, in which they are expected to take an active part. The club serves the purpose of developing an *esprit de corps* among graduate students and provides ways and means for securing prominent men for addresses on various subjects of interest.

COLLEGE OF ARTS AND SCIENCES

PAUL PRENTICE BOYD, M. A., Ph. D., Dean

ANATOMY AND PHYSIOLOGY

101a. HUMAN OSTEOLOGY. The study begins with the development of the skeleton. This is followed by the process of ossification and the histology of bones. Each bone is studied in detail, drawings are made from the bone. At intervals oral and written examinations are given. The notebook is carefully inspected and reasonably good drawings are required. The work may be amplified to most any extent and some comparative anatomy included. *Recitation one hour; laboratory two hours a week. First semester.* Professor Pryor.

101b. HUMAN OSTEOLOGY. A continuation of 101a. *Recitation one hour, laboratory two hours a week. Second semester.* Professor Pryor.

ANCIENT LANGUAGES AND LITERATURES

LATIN

107. TACITUS (Germania, Agricola, Dialogues). Special attention is given to the style of Tacitus, and to his treament of biography. His treatise on Germany is the best one extant. The content of it will be carefully noted. *Three hours a week. First semester.* Professor Jones.

108. TERRENCE. (Phormio); PLINY'S LETTERS (Selections). The student will get a general introduction to the dramatic and epistolary literature of the Romans. Talks will be given on the Roman theatre, the influence of Greek literature upon that of Rome, the home and political life of Pliny. *Three hours a week. Second semester.* Professor Jones.

109. LATIN LITERATURE (Selections). The authors read will probably be: Juvenal (Selected Satires); Martial (Selected Epigrams). 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. *Three hours a week. First semester.* Professor Jones.

110. LATIN LITERATURE (Selections). The authors read will probably be: Suetonius (Claudius and Nero); Seneca (Selections). The private life of the Caesars is discussed in detail. The principles of the Stoic philosophy are explained. *Three hours a week. Second semester.* Professor Jones.

114a. LATIN COMPOSITION. The course will begin with easy passages in connected discourse and will proceed to more difficult selections. *One hour a week. First semester.* Professor Jones.

114b. LATIN COMPOSITION. A continuation of 114a. *One hour a week. Second semester.* Professor Jones.

151a. COURSE IN INDIVIDUAL WORK. The work assigned will depend upon the needs of the student. *Three hours a week. First semester*. Professor Jones.

151b. COURSE IN INDIVIDUAL WORK. A continuation of 151a. *Three hours a week. Second semester*. Professor Jones.

201a. LATIN PASTORAL POETRY. This course is based mainly on Virgil's Ecologues and Georgics. The development of the author's talent will be noted and his models traced. In addition one or two dramas will be read, or selections from Lucretius. *Three hours a week. First semester*. Professor Jones.

201b. LATIN ELEGIAC POETRY. Selections from Catullus, Tibullus, Propertius and Ovid will be read. The change in the subject matter of the Elegy will be noted. Scanning. Mythological references studied. *Three hours a week. Second semester*. Professor Jones.

GREEK

152a. ANABASIS. One book of the Anabasis will be read, and easy selections from other writers. Exercises in construction and composition. *Three hours a week. Second semester*. Professor Jones.

152b. ANABASIS. A continuation of 152a. Selections from the remaining books of the Anabasis and from other writers of equal difficulty will be read. *Three hours a week. First semester*. Professor Jones.

153. HOMER. The Iliad, Books 1-6. The Homeric Question, Life in the Homeric Age, Mycenean Antiquities, recent discoveries, will receive due attention. Scanning. *Three hours a week. Second semester*. Professor Jones.

154. PLATO. The Apology and Crito, selections from Phaedo. The relation of Plato to Socrates, Socrates as a moral teacher, his methods of investigation, will be discussed. *Three hours a week. First semester*. Professor Jones.

155. HERODOTUS. Books 6-7. This course will include a rapid survey of Greek History from the Ionic Revolt to the end of the Persion Wars. *Three hours a week. Second semester*. Professor Jones

ART

108a. ART STRUCTURE. This course deals with problems of designing for tapestry, stained glass, mosaic, and other advanced problems. The problems will be considered from the historical point of view. *Four hours a week. Two credits*. Professor Sax.

108b. ART STRUCTURE. A continuation of 108a. Full sized cartoons will be completed in color, for an advanced composition in some of these or similar mediums. *Four hours a week. Two credits*. Professor Sax.

109a. DRAWING AND PAINTING. This course includes portrait in oils from life, and in the spring and fall, Landscape Painting from nature. *Lectures and recitations two hours, studio six hours. Four credits.* Professor Sax.

109b. DRAWING AND PAINTING. A continuation of 109a. *Lectures and recitations two hours, Studio six hours. Four credits.* Professor Sax.

112a. ART STRUCTURE. This is an advanced course in Pictorial Composition. Illustration, mural painting, and other forms of composition will be studied. *Four hours a week. Two credits.* Professor Sax.

112b. ART STRUCTURE. A continuation of 112a. One major problem will be carried out in this course. *Four hours a week. Two credits.* Professor Sax.

114a. STAGE CRAFT. This course deals with the problem of producing in the modern theatre, considers such problems as lighting, costume, painting and constructing scenery, devices and mechanism for changing and setting up scenery, methods of cost of construction, and the use and application of material. The problems of various types of drama are taken up and applied, and models and working drawings for various types of scenery are made. Opportunity will be given to carry out work on a large scale to those who show the requisite fitness. *Lectures and recitations one hour a week, studio four hours. Three credits.* Professor Sax.

114b. STAGE CRAFT. A continuation of 114a. *Lectures and recitations one hour a week, studio four hours. Thre credits.* Professor Sax.

123a. SPECIAL PROBLEMS. This course deals with special problems in original investigation and requires a thesis. Such problems as the sources of design found in the mountain coverlets; the influence of the Shakers on the architecture of the Blue Grass; early Kentucky glass manufacturere, etc., are considered. *For hours a week. Two credits.* Professor Sax.

123b. SPECIAL PROBLEMS. A continuation of 123a. *Four hours a week. Two credits.* Professor Sax.

128a. ART PROBLEMS FOR MAJOR SCIENCE STUDENTS. This course is designed to give facility in the technical requirements for scientific illustration, and presupposes a thorough grounding in prospective projection of shades and shadows, and of the principles of color. *Two credits.* Professor Sax.

128b. ART PROBLEMS FOR MAJOR SCIENCE STUDENTS. A continuation of 128a. *Two credits.* Professor Sax.

BACTERIOLOGY

102. GENERAL BACTERIOLOGY. Morphology, classification physiology, observation and cultivation of bacteria and related microorganisms; their relation to certain fermentations and to the preservation of food; their influence on the plant food in the soil. Microorganisms in milk, water, air and soil. Relation of microorganisms to disease; sources and modes of infection; use of germicidal agents; theories of immunity. Prerequisite, Chemistry 8. *Lectures and recitations two hours, laboratory four hours a week. First semester. Repeated second semester.* Professor Sherago and assistants.

103. PATHOGENIC BACTERIOLOGY. Cultivation, morphology, means of identification, powers of resistance, pathogenesis, distribution, channels of infection and means of dissemination of pathogenic microorganisms, especially those related to specific infectious diseases of man and animals. Study of preparation, standardization, and uses of vaccines, toxins, antitoxins and other biological products related to the diagnosis, prevention and treatment of specific infectious diseases. Application of the various phenomena of immunity in the diagnosis of infectious diseases; agglutination, precipitation and complement fixation reactions. Anaphylaxis. Prerequisites, course 102 of 2b, and Chemistry 8. *Lectures and recitations two hours, laboratory four hours a week. First semester.* Professor Sherago.

104. APPLIED BACTERIOLOGY. Microbiology of water and sewage, milk and foods. Bacteriological analysis. Study of various industrial problems affected by microorganisms. Prerequisites, course 102 or 2b and Chemistry. *Laboratory four hours a week. Second semester.* Professor Sherago.

105a. ADVANCED BACTERIOLOGY. Laboratory methods in the diagnosis of disease. Designed for students specializing in Public Health Bacteriology. Prerequisites, courses 103 and 104. *Laboratory six hours a week. Second semester.* Professor Sherago.

105b. ADVANCED BACTERIOLOGY. A continuation of 105a. *Laboratory six hours a week. Second semester.* Professor Sherago.

111. GENERAL PATHOLOGY. A general course in Pathology, consisting of lectures, demonstrations, recitations and laboratory work. The laboratory work comprises examination of gross specimens, and microscopic examination of morbid tissue. Emphasis will be put on pathological technique and on the study of pathological histology. Prerequisites Physiology 1, Zoology 1 or 5 and Histology 101b. *Lectures and recitations two hours, laboratory four hours a week. Second semester.* Professor Sherago.

115. INDIVIDUAL WORK. Students will be assigned special problems in laboratory work and reference reading. Prerequisite, 103 or 104. *Laboratory six hours a week. Three cedits.* Professor Sherago.

201a. RESEARCH IN BACTERIOLOGY. *Laboratory ten hours a week. Five credits. First semester.* Professor Sherago.

201b. RESEARCH IN BACTERIOLOGY. A continuation of course 201a. *Laboratory ten hours a week. Five credits. Second semester.* Professor Sherago.

BOTANY

106a. SPECIAL PROBLEM. The qualified student will be assigned some problems for solution. *Three credits* Professors McFarland and McInteer.

106b. SPECIAL PROBLEM. A continuation of 106a. *Three credits.* Professors McFarland and McInteer.

111. CLASSIFICATION OF PARASITIC FUNGI. Entire time will be taken up in studying the fungi that causes diseases of plants, both cultivated and wild. *Two hours a week. One credit.* Professor McFarland.

125a. MORPHOLOGY OF FUNGI. A detailed study of the different types of fungi from the standpoint of morphology, cytology and physiology. *Two lectures, four hours laboratory a week. Four credits.* Professor McFarland.

125b. MORPHOLOGY OF FUNGI. A continuation of 125a. *Two lectures, four hours laboratory a week. Four credits.*

126a. MYCOLOGY. A course which employs the entire time of the student in identification of unknowns. *Four credits.* Professor McFarland.

126b. MYCOLOGY. A continuation of 126a. *Four credits.* Professor McFarland.

150a. ADVANCED SYSTEMATIC BOTANY. A continuation of course 105, but more work and more difficult plants are studied. *Ten hours laboratory a week. Five credits.* Professors McFarland and McInteer.

150b. ADVANCED SYSTEMATIC BOTANY. A continuation of 150a. *Ten hours laboratory a week. Five credits.* Professors McFarland and McInteer.

206a. RESEARCH IN MORPHOLOGY. *Ten hours a week. Five credits.* Professors McFarland and McInteer.

206b. RESEARCH IN MORPHOLOGY. A continuation of 206a. *Ten hours a week. Five credits.* Professors McFarland and McInteer.

207a. RESEARCH IN MYCOLOGY. *Ten hours a week. Five credits.* Professor McFarland.

207b. RESEARCH IN MYCOLOGY. A continuation of 207a. *Ten hours a week. Five credits.* Professor McFarland.

210a. RESEARCH IN PLANT PHYSIOLOGY. *Ten hours a week. Five credits.* Professor McInteer.

210b. RESEARCH IN PLANT PHYSIOLOGY. A continuation of 210a. *Ten hours a week. Five credits.* Professor McInteer.

213a. RESEARCH IN SYSTEMATIC BOTANY. *Ten hours a week. Five credits.* Professors McFarland and McInteer.

213b. RESEARCH IN SYSTEMATIC BOTANY. A continuation of 213a. *Ten hours a week. Five credits.* Professors McFarland and McInteer.

CHEMISTRY

104. SYNTHETIC INORGANIC CHEMISTRY. An intermediate course planned to aid the student in gaining a more adequate knowledge of practical inorganic chemistry. Elective. *Laboratory ten hours a week. Second semester.* Professor Maxson.

105. INTERMEDIATE COURSE IN PHYSICAL CHEMISTRY. Prerequisite, Chemistry 115b and Calculus. More advanced theories and laws and a more detailed study of the theories, laws, etc., which are not thoroughly covered by Chemistry 115a and 115b. *Lectures two hours a week, laboratory six hours a week. Either semester.* Assistant Professor Bedford.

106. ADVANCED ORGANIC CHEMISTRY. Prerequisites, Chemistry 113b. 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. *Laboratory ten hours a week.* Assistant Professor Barkenbus.

107. SELECTED PROBLEMS IN QUANTITATIVE ANALYSIS. Prerequisite, Chemistry 114. *Laboratory ten hours a week. Second semester.* Professor Tuttle.

108. COLLOID CHEMISTRY. A course involving the preparation of colloids and study of the physical and chemical properties of matter in the colloidal state. *Laboratory work with conferences and collateral reading ten hours a week.* Professor Maxson.

109. QUANTITATIVE ANALYSIS. A lecture and laboratory course devoted to the analysis of ores, alloys, etc. Prerequisite, Chemistry 8. *Laboratory ten hours a week. First semester.* Professor Tuttle.

112. ADVANCED AGRICULTURAL ANALYSIS. A laboratory course having for its object the complete analysis of fertilizers, feeds, soils and agricultural products. Prerequisite, Chemistry 8. *Laboratory eight hours a week. Second semester.* Professor Tuttle.

113a. ORGANIC CHEMISTRY. Prerequisite, Chemistry 1b. 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. *Three recitations and four labortary hours a week. First semester.* Assistant Professor Barkenbus.

113b. ORGANIC CHEMISTRY. A continuation of Chemistry 113a. Prerequisite Chemistry 113a. Cyclic series. *Three recitations and six*

laboratory hours a week. Second semester. Assistant Professor Barkenbus.

114. ADVANCED QUANTITATIVE ANALYSIS. The analysis of iron and steel, slags and rocks. *Laboratory ten hours a week. First semester.* Professor Tuttle.

115a. INTRODUCTORY COURSE IN PHYSICAL CHEMISTRY based upon the fundamental laws of chemistry. Determination of atomic and molecular weights; gaseous, liquid and solid states of matter, solutions, ideal and ionized; Thermochemistry. *Lectures and recitations two hours a week, laboratory two hours a week. First semester.* Assistant Professor Bedford.

115b. INTRODUCTORY COURSE IN PHYSICAL CHEMISTRY. A continuation of 115a. Prerequisite, Chemistry 115a. Homogeneous and Heterogenous Equilibria; Chemical Kinetics; Structure of Matter; Periodic Law; Radio-chemistry; Colloids; Electro-chemistry. *Lectures and recitations two hours a week, laboratory two hours a week. Second semester.* Assistant Professor Bedford.

118. WATER ANALYSIS. In this course waters are examined to determine their fitness for domestic and other purposes. *Laboratory four hours a week. First semester.* Professor Tuttle.

119a. INDUSTRIAL CHEMISTRY. A survey course on modern industrial chemistry using text as a basis for discussion. *Two hours a week. First semester.* Professor Maxson.

119b. INDUSTRIAL CHEMISTRY. A continuation of 119a. *Two hours a week. Second semester.* Professor Maxson.

122a. JOURNAL CLUB. Conferences and reports on chemical literature and training in the use of literature for research purposes. *One hour a week. First semester.* Professor Maxson.

122b. JOURNAL CLUB. A continuation of 122a. *One hour a week. Second semester.* Professor Maxson.

129. FOOD CHEMISTRY AND ANALYSIS. The composition, adulteration and preservation of food. Laboratory practice on the analysis of milk, sugar, baking powder, vinegar, alcoholic beverages, fats, etc. Prerequisite, Chemistry 7a or 113a and 8. *Lectures and discussions one hour a week with assigned reading, laboratory eight hours a week. First semester.* Professor Tuttle.

130a. PHYSIOLOGICAL CHEMISTRY. The chemistry and 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 effects of a diet of selected food principles on the quantity of metabolic products. Prerequisite, Chemistry 7 or 113a. *Two lectures, six laboratory hours a week. First semester.* Assistant Professor Barkenbus, Professor Tuttle.

130b. PHYSIOLOGICAL CHEMISTRY. A continuation of 130a. *Two lectures, six hours laboratory a week. Second semester.* Assistant Professor Barkenbus, Professor Tuttle.

150. ADVANCED INORGANIC CHEMISTRY. Prerequisite, Chemistry 115b. A survey course covering the less common side of inorganic chemistry including laboratory work in synthesis. *Two recitations and four laboratory hours a week. Second semester.* Professor Maxson.

201. SYNTHETIC INORGANIC CHEMISTRY. Practice and research in inorganic synthesis, with use of original literature. *Laboratory ten hours a week. Either semester.* Professor Maxson.

202. QUANTITATIVE ANALYSIS. A critical study of known procedures and research in analytical chemistry. *Laboratory ten hours a week. Either semester.* Professor Tuttle.

203a. ADVANCED PHYSICAL CHEMISTRY. Prerequisites, Chemistry 115b and Calculus. *Lectures and laboratory on selected topics, two hours a week. Either semester.* Assistant Professor Bedford.

203b. ADVANCED PHYSICAL CHEMISTRY. Laboratory course on selected topics in Advanced Physical or Electro-chemistry. To be preceded or accompanied by Chemistry 203a. This course is arranged primarily for candidates for the master's degree who may select a topic in Physical Chemistry for their thesis. *Six or more hours a week. Either semester.* Assistant Professor Bedford.

204a. ORGANIC CHEMISTRY. Prerequisite, Chemistry 106. A laboratory course with conferences on special problems in organic chemistry. *Ten hours laboratory a week. Either semester.* Assistant Professor Barkenbus.

204b. ORGANIC CHEMISTRY. Prerequisite, Chemistry 204a. *Ten laboratory hours a week. Either semester.* Assistant Professor Barkenbus.

ENGLISH LANGUAGE AND LITERATURE

104. MILTON. A study of Milton's poetry and most important prose works. The relation of Milton to his contemporaries. Graduate students will be assigned special topics for investigation. *Two hours a week. First semester.* Professor Dantzler.

105. BROWNING. An intensive study of the art and teaching of Browning Graduate students will be assigned special topics for investigation. *Two hours a week. Second semester.* Professor Dantzler.

106. THE ROMANTIC MOVEMENT IN ENGLISH 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 18th century. The French Revolution and its influence on the chief poets of the Romantic Movement. Special emphasis on Wordsworth, Byron,

Shelly, Keats and other prominent poets of the first quarter of the 19th century. *Three hours a week. First semester.* Assistant Professor Brady.

107. VICTORIAN POETRY. 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. *Three hours a week. Second semester.* Assistant Professor Brady.

111. THE ENGLISH NOVEL. Aims to present the development of the novel from Richardson to the most modern writers, including Joyce, Huxley, and Firbank, and to form and guide taste in reading fiction. Reading list of fourteen novels. *Three hours a week. Second semester.* Associate Professor Knight.

114. AMERICAN LITERATURE. A survey of our national literature from colonial times to the present. Emphasis upon a few periods, including the contemporary renaissance. *Two hours a week. Second semester.* Associate Professor Knight.

117. LITERARY COMPOSITION. Meant to stimulate original writing in any form the student prefers. The class becomes a laboratory for readings, criticisms and discussions. Those taking it should be interested, at least in a speculative way, in becoming writers. *Two hours a week. Second semester.* Associate Professor Knight.

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 discussions. 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. *Three hours a week. First semester.* Assistant Professor Brady.

130b. COMPARATIVE LITERATURE. A continuation of English 130a. *Three hours a week. Second semester.* Assistant Professor Brady.

134. DEVELOPMENT OF THE ESSAY FROM BACON TO THE PRESENT DAY. Class discussion of assigned readings from representative essayists. Study of various types, such as the familiar, critical, historical and philosophical essay, with some practice by the student in writing original essays. *Three hours a week. First semester.* Assistant Professor Brady.

135. PRE-VICTORIAN PROSE. A careful study of some of the prose monuments of English Literature with special emphasis on the groups of writers surrounding the period of the French Revolution, with consideration of the philosophical and political writing of the age. *Three hours a week. Second semester.* Assistant Professor Brady.

136. VICTORIAN PROSE. A careful study of Carlisle, Ruskin, Newman, Spencer, Arnold, Huxley, and related writers of the period in the field of prose. Special emphasis is placed upon Carlyle's Sartor Res-

artus and Newman's Idea of a University and Apologia Pro Vita Mea. Assigned parallel readings, class discussion and lecture. *Three hours a week. First semester.* Assistant Professor Brady.

201a. LITERARY CRITICISM. This 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 assays the unity of all literature, its everlasting growth and the importance of inductive observation of literary phenomena. Prerequisite beginning in 1928, English 108a and 108b. *Three hours a week. First semester.* Professor Farquhar.

201b. LITERARY CRITICISM. A continuation of 201a. Special problems assigned to students. *Three hours a week. Second semester.* Professor Farquhar.

202a. STUDIES IN CONTEMPORARY DRAMA. This course is an application of the philosophy and history of drama to the modern dramas as a whole and to the work of some particular dramatist. It includes a particular study of the work of Ibsen as prerequisite to any other study Prerequisite beginning in 1928, English 116. *Three hours a week. First semester.* Professor Farquhar.

202b. STUDIES IN CONTEMPORARY DRAMA. A continuation of 202a. Special problems assigned to students. *Three hours a week. Second semester.* Professor Farquhar.

204a. BEOWULF. A literary and linguistic study of Beowulf. Lecture and recitation. One year of Old English and a reading knowledge of German are prerequisite. *Two hours a week. First semester.* Professor Dantzler.

204b. BEOWULF. A continuation of 204a. *Two hours a week. Second semester.* Professor Dantzler.

205. CHAUCER. Chaucer's contribution to English Lietrature; the greater part of his poetry will be read. Lecture and recitation. Each member of the class will prepare two papers. *Two hours a week. First semester.* Professor Dantzler.

207. SPENSER. A study of Spenser and his poetry. Lecture and recitation. A problem will be assigned to each member of the class for study. *Two hours a week. Second semester.* Professor Dantzler.

GEOLOGY

101a. PALEONTOLOGY. A study of the invertebrate fossils dealing with both their systematic and stratigraphic relationships. *Three hours a week. First semester.* Professor McFarlan.

101b. PALEONTOLOGY. A continuation of 101a. *Three hours a week. Second semester.* Professor McFarlan.

104a. ADVANCED FIELD GEOLOGY. Training in field methods applied to problems in structural, areal and stratigraphic geology. *Two credits. First semester.* Professor McFarlan.

104b. ADVANCED FIELD GEOLOGY. A continuation of 104a. *Two credits. Second semester.* Professor McFarlan.

105a. INDEPENDENT WORK IN GEOLOGY. Individual work on assigned problems. *Three credits. First semester.*

105b. INDEPENDENT WORK IN GEOLOGY. A continuation of 105a. *Three credits. Second semester.*

106a. ECONOMIC GEOLOGY. An advanced study of representative deposits of both metallic and nonmetallic minerals and rocks of commercial value. Emphasis is placed on the genesis of these deposits. *Three credits. First semester.* Assistant Professor Robinson.

106b. ECONOMIC GEOLOGY. A continuation of 106a. *Three credits. Second semester.* Assistant Professor Robinson.

116. OIL GEOLOGY. A study of oil and gas accumulation and exploitation with emphasis on the position and usefulness of the geologist in this field. *Two credits. Second semester.* Assistant Professor Robinson.

202a. RESEARCH IN GEOLOGY. *Five credits. First semester.*

202b. RESEARCH IN GEOLOGY. A continuation of 202a. *Five credits. Second semester.*

GERMAN

GERMAN 101a. The Drama. Readings from Schiller, Goethe and Lessing. Supplementary reading from the same authors and other dramatists of the period that is known as the "Second Golden Age of German Literature" (1748-1832), together with lectures on the literature of this period. *Three hours a week. First semester.* Professor Melcher.

GERMAN 101b. The Drama. Continuation of 101a. *Three hours a week. Second semester.* Professor Melcher.

GERMAN 102a. Novel and Drama. Readings from modern dramatists and novelists (from 1871 to the present). Also, more extensive supplementary reading, together with lectures on the principal writers of the period and their works. *Three hours a week. First semester.* Professor Melcher.

GERMAN 102b. Novel and Drama. Continuation of 102a. *Three hours a week. Second semester.* Professor Melcher.

HISTORY

114. THE RENAISSANCE. A study of the Italian Renaissance from 1300 to 1500. The states and cities of Italy and their scholars; general movements, political and other; rise of the modern spirit along the several lines of art and science, education, philosophy, commerce and exploration. Text, lectures, reports. *Three hours a week. First semester.* Professor Tuthill.

119. 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. *Three hours a week. Given in alternate years.* Professor Tuthill.

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, inventions and discoveries. Reports on current literature and assigned reading on a liberal scale. *Three hours a week. Second semester.* Professor Tuthill.

125a. HISTORY OF THE SOUTH. The main features of southern life and institutions in the colonial and national periods; geographical background, plantation areas and slavery before the revolution; colonization of the frontiers; party history, expansion and nullification to 1833; Expansion west and southwest; the cotton kingdom; political and constitutional history, 1832-1861. *Three credits.* Assistant Professor Stephenson.

125b. HISTORY OF THE SOUTH. A continuation of 125a, examining in the same way the problems of reconstruction and the new south. *Three credits.* Assistant Professor Stephenson.

130. HISTORY OF THE WEST. Beginning in 1748 the history of the west will be carried down to 1840. Political history will be stressed and a constant attempt made to show the influence of the westward movement on national affairs. Prerequisite, History 5a or equivalent. *Three credits.* Assistant Professor George.

140. INDIVIDUAL WORK. This course is designed for exceptional students majoring in the Department of History and Political Science. The field work is determined by the qualifications and the interest of the student. The work is entirely individual, no lectures being given. The instruction in the course is done in individual weekly conferences with the professor to whom the student is assigned. Open to students at the discretion of the head of the department and the professors in charge. *Two credits.*

POLITICAL SCIENCE

101. LATIN AMERICAN RELATIONS. A surface glimpse of the rise and history of each of the Latin-American states and a study of the relationships between these states and the United States, the Monroe Doctrine and Pan-Americanism; the A. B. C. Conference and the posi-

tion of the United States as near-protectorate over certain of the Caribbean states will receive attention. *Three hours a week. Given in alternate years.* Professor Jones.

140. INDIVIDUAL WORK. The requirements are identical with those in Hisory 140, as stated above. *Two credits.*

150. INTERNATIONAL LAW. Lectures, text and case books, International law in war and peace. Additional reading required of graduate students for graduate credit. *Two hours a week. Second semester.* President McVey.

155a. COMPARATIVE GOVERNMENT. A general survey of the government of England, France, Italy, Switzerland, Canada, Australia and Brazil, with especial emphasis in the study of the government of England. Primarily a lecture course with written quizzes at appropriate intervals. A minimum amount of supplementary reading and reports may be required. Open to juniors, seniors and graduate students. Graduate students are required to give reports in addition to the regular assignments. *Three hours a week. First semester.* Professor Jones.

155b. COMPARATIVE GOVERNMENT. A continuation of 155a. The scope of the work covers a study of the government of the old German empire, new Germany, Austria, Poland, Czechoslovakia, Jugoslavia, Russia and some other new governments of Europe. Graduate students are required to do additional outside reading. *Three hours a week. Second semester.* Professor Jones.

157. PUBLIC UTILITIES. A study of the nature of public utilities and their relation to the government, emphasizing government control. The chief emphasis of the course will be placed upon municipal and other local utilities with only slight attention given to interstate railways, waterways, pipe lines, telegraphs, telephones, etc. Graduate students will be required to read and report on additional assignments. *Two hours a week. First semester.* Assistant Professor George.

160a. FOREIGN SERVICE. This course deals with the organization and the work of the state department, the diplomatic and consular officers and with other agencies of the American Government emphasized in foreign service. Additional work will be required of all graduate students. *Two hours a week.* Professor Jones.

160b. FOREIGN SERVICE. A continuation of 160a. *Two credits.* Professor Jones.

175a. LEGISLATIVE DRAFTING. This course is designed primarily for seniors and graduate students majoring in the field of Political Science. An attempt is made to acquaint the student with some of the problems and technique of legislative drafting. Actual problems in legislation will be taken up and the student will spend the bulk of his time in the practical work of drafting laws. Open only to seniors and graduate students upon the recommendation of the professor in charge, and the head of the department. *One hour credit.*

253. COMPARATIVE CONSTITUTIONAL LAW. This course deals with the questions of sovereignty, government and individual liberty in the United States, Great Britain, Germany and France. About one-third of the semester will be given to the constitutional law of the United States. *Three hours a week*. Professor Tuthill.

HYGIENE

105a. ADVANCED HYGIENE. This course deals with the specific problems in the field of hygiene and the methods of prevention in each field. Prerequisites, 1a and 1b. *Two hours a week. Two credits. First semester*. Professor Rush.

105b. ADVANCED HYGIENE. A continuation of 105a. *Two hours a week. Two credits. Second semester*. Professor Rush.

108. DISEASES OF OCCUPATION. A discussion of health hazards in the various professions and industries with emphasis placed upon preventive measures. Prerequisites, 1a and 1b. *Two hours a week. Two credits. Second semester. Summer school*. Professor Rush.

MATHEMATICS AND ASTRONOMY
MATHEMATICS

102. VECTOR ANALYSIS. This course provides a thorough study of the algebra of vectors with numerous applications to geometry and solid analytics. Also a brief introduction to the calculus of vectors with applications to differential geometry, mechanics and physics. Given chiefly by lectures supplemented by collateral reading. *Three hours a week*. Associate Professor Rees.

103. THEORY OF EQUATIONS. An elementary course treating: Properties of determinants; properties of polynomials; fundamental theorem of algebra; solutions of numerical equations; limits of roots; separation of roots; relation between coefficients and roots; symmetric functions; elimination. *Three hours a week*. Associate Professor Downing.

104. ADVANCED ANALYTICS. This course is intended to bridge the gap between elementary analytics and modern geometry. Trilinear coordinates are introduced and some of the more important propositions relating to conic sections are proved. *Three hours a week*. Associate Professor Rees.

105a. DIFFERENTIAL EQUATIONS. A study of the more common types of ordinary differential equations with emphasis on geometrical interpretations and applications to geometry, elementary mechanics and physics, with a brief study of partial differential equations of the first order. *Three hours a week*. Professor Davis.

105b. DIFFERENTIAL EQUATIONS. This course extends the study of the ordinary differential equations giving some particular attention to certain types of equations. The study of the partial differential equation is extended to those of the second and higher orders. *Three hours a week.* Professor Davis.

106a. ADVANCED CALCULUS. Review of the fundamental theory from a more advanced viewpoint. Fundamental theorems on continuous functions; Taylor's formula for n variables; Jacobians; envelopes of curves and surfaces; series. *Three hours a week.* Associate Professor LeStourgeon.

106b. ADVANCED CALCULUS. Cauchy-Riemann integration; mean value theorems; selected topics, including an introduction to Fourier series, gamma and beta functions, ellipic integrals and elements of elliptic functions with attention to problems and applications. *Three hours a week.* Associate Professor LeStourgeon.

107. PROJECTIVE GEOMETRY. A study of the content and the methods of modern synthetic geometry. It is designed also as an introduction to the course in Geometric Transformations. *Three hours a week.* Dean Boyd.

109. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. This is an introductory course based largely on Townsend's "Theory of Functions of a Complex Variable." Emphasis is placed on geometrical interpretations of the analysis. *Three hours a week.* Associate Professor Rees.

110a. INDEPENDENT WORK IN MATHEMATICS. The student is assigned some topic or line for investigation. He confers with the professor in charge each week and prepares a written report covering the work of the semester for presentation before the departmental faculty. *Three credits.* Dean Boyd and others.

110b. INDEPENDENT WORK IN MATHEMATICS. A continuation of 110a. *Three credits.* Dean Boyd and others.

111. HIGHER ALGEBRA. Selected topics from algebra with emphasis on the relations of algebraic theories to geometry. Properties of matrices, invariant factors and elementary divisors; algebraic theory of a single quadratic or bilinear form; theory of pairs of quadratic or bilinear forms. *Three hours a week.* Associate Professor LeStourgeon.

201a. GEOMETRIC TRANSFORMATIONS. Homogeneous coordinates are usually developed first. Then follow in order the projective transformations in the binary, ternary and quarternary fields. Invariant theory and groups of transformations are also included. The material varies from year to year. *Three hours a week.* Dean Boyd.

201b. GEOMETRIC TRANSFORMATIONS. A continuation of 201a. *Three hours a week.* Dean Boyd.

202a. ALGEBRAIC CURVES. This course covers the classic theory as presented by such authors as Salmon and Wieleitner. The material varies from year to year. *Three hours a week.* Dean Boyd.

202b. ALGEBRAIC CURVES. A continuation of 202a. *Three hours a week*. Dean Boyd.

203. THESIS. The work on the master's thesis is recorded under this number. It is rated as three credits, but is not to be included in the twenty-four required for the degree. Dean Boyd and others.

ASTRONOMY

251a. CELESTIAL MECHANICS. This part of the course deals with differential equations of motion and their solution for various laws of force, laws of force from known motion, attraction, potential, problem of two bodies. *Three hours a week. First semester.* Associate Professor Downing.

251b. CELESTIAL MECHANICS. A continuation of 251a, dealing with the problem of three bodies, determination of orbits, perturbations, the lunar theory, precession and nutation. *Three hours a week. Second semester.* Associate Professor Downing.

PHILOSOPHY

101a. HISTORY OF PHILOSOPHY. A critical study of the chief systems of Greek Philosophy and of the Theological Philosophy of the Middle Ages. *Three hours a week. First semester.* Professor Terrell.

101b. HISTORY OF PHILOSOPHY. A continuation of 101a. A similar study of Modern Philosophy. *Three hours a week. Second semester.* Professor Terrell.

102. LOGIC—DEDUCTIVE AND INDUCTIVE. In the study of Deductive Logic our attention is fixed upon syllogism. In Inductive Logic a study is made of the methods which have proved so successful in the development of science. *Three hours a week. First semester.* Professor Terrell.

103. ETHICS. A study of the origin and evolution of morals, the good and evil, right and wrong, good citizenship, etc. *Three hours a week. Second semester.* Professor Terrell.

105. PHILOSOPHY OF RELIGION. A comparative study of the leading religions, the origin of religion, an analysis of the notions about sacrifice, sin, the atonement, etc. Not given in 1926-27. *Three hours a week. Both semesters.* Professor Terrell.

107a. POLITICAL PHILOSOPHY. This course is devoted to a study of Plato's Republic, the ideas and ideals of the Platonic Socrates. *Three hours a week. First semester.* Professor Terrell.

107b. POLITICAL PHILOSOPHY. Aristotle's politics, an analysis of his criticism of Plato and a special study of his methods of approach to the subject as contrasted with Plato. *Three hours a week. Second semester.*

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:

101. THEORY OF HEAT. A lecture and experimental course covering the fundamental principles of heat. Opportunity is offered to use the gas thermometer, resistance thermometer and various types of radiation pyrometers, determination of vapor pressure and densities, coefficients of viscosity, freezing and boiling points, latent and specific heats, heats of combustion, thermal conductivities, calibration of thermo-couples, etc. Given in 1925-26. Prerequisites, Mathematics 7a and 7b. *Lectures and recitations three hours, laboratory four hours a week.* Associate Professor Koppius.

102a. ELECTRICITY AND MAGNETISM. A course in the mathematical theory of electricity and magnetism. The laboratory work is designed to emphasize the principles covered and to give the student experience in the careful use of electrical measuring instruments. The course includes the modern methods of measuring current, high and low resistances, electromotive forces and power, the calibration of instruments employed, together with measurements of capacity, inductance, and the magnetization of iron. Given in 1926-27. Prerequisites, Mathematics 7a and 7b. *Lectures and recitations three hours, laboratory four hours a week.* Associate Professor States.

102b. ELECTRICITY AND MAGNETISM. A continuation of Physics 102a with particular emphasis on alternating current phenomena, transformers, transients, the vacuum tube and associated phenomena. Prerequisites, Mathematics 7a and 7b. *Lectures and recitations three hours, laboratory four hours a week.* Associate Professor States.

103. THEORY OF LIGHT. A course covering the general theory of reflection, refraction, diffraction and polarization. Prerequisites, Mathematics 7a and 7b. Given in 1925-26. *Lectures and recitations three hours a week, laboratory four hours a week.* Professor Webb.

104. ANALYTICAL MECHANICS. This course serves as an introduction to mathematical physics. Although the work is usually based upon some standard text, it is supplemented by lectures and extensions of the text in topics which are of primary interest to physicists. The student is expected to solve a representative list of problems. Given in 1925-26. Prerequisites, Mathematics 7a and 7b. *Lectures and recitations five hours a week.* Professor Koppius.

111. ELECTRICITY AND MAGNETISM. This course comprises the lectures and recitations of course 102a. Given in 1926-27. Prerequisites, Mathematics 7a and 7b. *Lectures and recitations three hours a week.* Associate Professor States.

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. Prerequisite, Physics 103. Given in 1926-27. *Lectures and recitations three hours a week*. Professor Webb.

202. MEASUREMENTS IN OPTICS. A course in the measurement of wave lengths, Fresnell Mirrors and Biprisms, determination of optical constants by Michelson's Interferometer, reflection and transmission grating, spectroscopes and concave grating spectographs. This course is designed to supplement 201. Prerequisite, Physics 103. Given in 1926-27. *Laboratory four hours a week*. Professor Webb.

203. KINETIC THEORY OF GASES AND THERMODYNAMICS. 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, Bownian movements and specific heat relations are treated from the kinetic theory standpoint and equations of change of state are developed. The basis for the laws of thermodynamics are discussed and their physical applications. Prerequisites, 7a and 7b. Given in 1926-27. *Lectures and recitations three hours a week*. Associate Professor Koppius.

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. Prerequisite, Physics 104. Given in 1926-27. *Lectures and recitations three hours a week*. Professor Webb.

212. CONDUCTION OF ELECTRICITY THROUGH GASES. A course of lectures covering in chronological order 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, isotropes, etc., are treated. Prerequisites, Physich 102a and 104. Given in 1926-27. *Three hours a week*. Associate Professor Koppius.

213. ELECTRO-MAGNETIC THEORY OF LIGHT. A course of lectures covering the classical 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-conducting media are treated. Prerequisite, Physics 103. Given in 1927-28. *Three hours a week*. Associate Professor States.

215. QUANTUM THEORY. A course of lectures covering the historical development of the quantum hypothesis. Review of the fundamen-

tals of thermodynamics. Application of the quantum theory to black body radiation, to specific heats, to Bohr-Sommerfeld theory of the spectra of the lighter elements and to X-ray spectra. Prerequisites, Physics 104 and Mathematics 105. Given in 1925-26. *Three hours a week.* Associate Professor States.

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 only to those who satisfactorily present papers. *Two hours a week.* 1 *credit.*

220b. SEMINAR. A continuation of 220a. *Two hours a week.* 1 *credit.*

225. THESIS. This course is intended for graduate students who are prepared to undertake social problems. Except in the case of a purely mathematical problem the entire time is to be devoted to work in the laboratory. Professors Webb and Pence; Associate Professors States and Koppius.

PSYCHOLOGY

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 in 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.

Another field in which special facilities are provided is that of the psychological clinic. The department has maintained such a clinic for five years. It has also established close contacts with the public schools, the welfare agencies, the Eastern State Hospital for the Insane, the reformatory institutions, and the State institution for the feeble-minded, all of which are located at or near Lexington. The department staff includes a Certified Consulting Psychologist of the American Psychological Association and the Director of the Kentucky Station of the Psychological Corporation. These are the two national organizations for conducting authoritative work in applied psychology.

Laboratory and test equipment and the library facilities are adequate for advanced graduate work in the above two fields of specialization. In certain other lines the facilities would be supplied for research if the student's interest made this desirable.

104. SOCIAL PSYCHOLOGY. Interpretations of the behavior of the individual as a member of society. Emphasis is placed upon such topics as the instinctive basis of behavior, the relation of the individual

to the mob, leadership, capital and labor, personality, religion and morality, and the influence of intelligence and race. *Three hours a week. First semester.* Assistant Professor Boynton.

107. PSYCHOLOGICAL INTERPRETATION. Problems of unusual behavior: Subconscious activities, psychotherapy, secondary personalties, genius, psychic phenomena and pathological mental states. *Three hours a week. Second semester.* Professor Miner.

108a. HUMAN MEASUREMENTS. Theories of intelligence. History of mental testing with interpretations of results. Especial attention is paid to the advantages and disadvantages of different methods of testing mental alertness, and their application to children. *Two hours a week. First semester.* Assistant Professor Boynton.

108b. HUMAN MEASUREMENTS. The methods of measuring special aptitudes and proficiency, including rating methods and tests of personality traits, motor or trade skill and achievement in particular fields. *Two hours a week. Second semester.* Professor Miner.

109a. DIAGNOSIS OF DEVELOPMENT. A practice course in giving and scoring mental tests, together with the interpretation of test data. Particular emphasis placed upon Stanford Revision of Binet-Simon test. Prerequisite or concurrent, 108a or 108b. *One hour discussion, three hours practice a week. Two credits. First semester.* Assistant Professor Boynton.

109b. DIAGNOSIS OF DEVELOPMENT. A continuation of 109a. The use of group and performance tests. Special reference to other factors than intelligence. Prerequisite or concurrent, 108a or 108b. *Two credits. Second semester.* Assistant Professor Boynton.

110. EXPERIMENTAL METHODS. An intensive course dealing with the methods of controlling conditions and measuring responses in the psychological laboratory. *Three credits.* Professor Miner.

112. PERSONNEL MANAGEMENT. The functions of a personnel department in business and industry. The scientific practices in the study of labor turnover, the selection and placement of employes, their training, supervision and motivation. *Three credits. Second semester.* Professor Miner.

113. PSYCHOLOGY OF LEARNING. An advanced experimental course dealing with the learning process. The nature of learning, interpretations of learning curves, economical methods of learning, effect of different methods of learning upon amount retained, individual differences in learning ability, and transfer of training. *Two hours recitation, two hours laboratory a week. Second semester.* Assistant Professor Boynton.

120a. INDEPENDENT WORK IN PSYCHOLOGY. *Two credits. First semester.* Assistant Professor Boynton, Professor Miner.

120b. INDEPENDENT WORK IN PSYCHOLOGY. *Two credits. Second semester.* Assistant Professor Boynton, Professor Miner.

201a. SEMINAR IN PSYCHOLOGY. *One two-hour discussion a week. One credit. First semester.* Professor Miner.

201b. SEMINAR IN PSYCHOLOGY. *One two-hour discussion a week. One credit. Second semester.* Professor Miner.

210a. RESEARCH IN PSYCHOLOGY. *Three credits. First semester.* Professor Miner.

210b. RESEARCH IN PSYCHOLOGY. *Three credits. Second semester.* Professor Miner.

ROMANCE LANGUAGES AND LITERATURES
FRENCH

109a. FRENCH LITERATURE OF THE XIX CENTURY. The works of the writers of XIX century are studied, *i. e.,* Victor Hugo, Thiophile Yantin, DeMusset, and Daudet. *Three hours a week. First semester.* Professor Zembrod.

109b. FRENCH LITERATURE OF THE XIX CENTURY. A continuation of 109a. *Three hours a week. Second semester.* Professor Zembrod.

110a. FRENCH LITERATURE OF THE XVII CENTURY. The classics of Corneille, Racine and Moliere are studied. Students are to familiarize themselves with the history of French society and civilization. Reports written in French are to be handled at regular intervals. Advanced lessons in syntax and composition once a week. *Three hours a week. First semester.* Professor Zembrod.

110b. FRENCH LITERATURE OF THE XVIII CENTURY. A continuation of 110a. *Three hours a week. Second semester.* Professor Zembrod.

SPANISH

104a. SPANISH LITERATURE. Spanish novel and drama, syntax and composition. *Three hours a week. First semester.* Professor Zembrod.

104b. SPANISH LITERATURE. A continuation of 104a. *Three hours a week. Second semester.* Professor Zembrod.

112a. SPANISH LITERATURE. Spanish novel and drama, syntax and composition. This course enables the student to become familiar with some of the works of the greatest novelists and dramatists of the golden age of Spain's literary history, and also of the second half of the XIX century. *Three hours a week. First semester.* Professor Zembrod.

112b. SPANISH LITERATURE. A continuation of 112a. *Three hours a week. Second semester.* Professor Zembrod.

113a. ROMANCE LANGUAGES. This course is for graduate students who are majoring in one of the romance languages. No definite work is put down. Work is assigned to suit the needs of the students. A good reading knowledge of German is essential. *Three hours a week by special appointment.* Professor Zembrod.

113b. ROMANCE LANGUAGES. A continuation of 113a. *Three hours a week by special appointment.* Professor Zembrod.

SOCIOLOGY

101. SOCIAL DEPENDENCE. A study of poverty or social dependence and of the measures of relief afforded through philanthropy or organized charity, together with general measures for social betterment. *Three hours a week. First semester.* Professor Best.

102. SOCIAL PATHOLOGY. A study of the causes of morbidity and mortality, and of the mentality and physically defective classes, with a consideration of preventive and therapeutic measures. *Three hours a week. Second semester.* Professor Best.

105. SOCIAL SYSTEMS. A study of social systems that have existed and that have been proposed, from Plato's time to the present. *Three hours a week. First semester.* Professor Best.

106. IMMIGRATION. A study of immigrant forces and their effects upon American life, and of the effects of American life upon immigrants. Race problems are also considered in the course. *Three hours a week. Second semester.* Professor Best.

201a. SOCIOLOGY SEMINAR. Consideration mainly of theses and of current sociological literature *One hour a week. First semester.* Professor Best.

201b. SOCIOLOGY SEMINAR. Continuation of 210a. *One hour a week. Second semester.* Professor Best.

DEPARTMENT OF ZOOLOGY

101a. HISTOLOGY. Histology of the tissues. Prerequisite, Zoology 1a and 1b. 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. *Lecture one hour, laboratory four hours a week. First semester.* Mr. Brauer.

101b. HISTOLOGY. Prerequisite, Zoology 101a. Histology of the organs. A continuation of course 101a. Lectures and laboratory work on the microscopic anatomy of the aminal body. *Lecture one hour, laboratory four hours a week. Second semester.* Mr. Brauer.

104. EMBRYOLOGY. A general course in ontogeny. Lectures on maturation, fertilization, cleavage, organogensis, and anomalies of de-

velopment. The laboratory work consists of a study of the germ cells, maturation, cleavage and development of the chick and of the pig. *Lecture one hour, laboratory four hours a week. Second semester.* Mr. Brauer.

105. MEDICAL ENTOMOLOGY. Insects (and briefly other animals) affecting the health and comfort of man. Identification, life histories, and etiology of many important species. Methods of study and methods of control. For pre-medical students. *Lecture one hour, recitation one hour, laboratory two hours a week. First semester.* Assistant Professor Allen.

107a. COMPARATIVE ANATOMY. Invertebrates. (1) Systematic consideration of all important 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. (5) Comparative organology and physiology of higher phyla. *Lecture one hour, recitation one hour, laboratory four hours a week. First semester.* Assistant Professor Allen.

107b. COMPARATIVE ANATOMY. Vertebrates. (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) Identification and demonstration of the bones of at least the Mammalian skeleton. *Lecture one hour, reciation one hour, laboratory four hours a week. Second semester.* Assistant Professor Allen.

108a. PRINCIPLES OF ZOOLOGY. An advanced lecture course open only to juniors, seniors and graduate students on the fundametnal principles of biology. The first semester is devoted primarily to the study of organic evolution. *Lectures three hours a week. Two credits. First semester.* Professor Funkhouser.

108b. PRINCIPLES OF ZOOLOGY. A continuation of 108a. The second semester is devoted to the study of heredity, eugenics and amimal instincts. *Lectures three hours a week. Two credits. Second semester.* Professor Funkhouser.

110a. INDIVIDUAL WORK. Special problems for individual students who are capable of pursuing independent investigations. *Laboratory and library work six hours a week. Three credits.* Professor Funkhouser, Assistant Professor Allen, Mr. Brauer.

110b. INDIVIDUAL WORK. A continuation of 110a. *Laboratory and library work six hours a week. Three credits.* Professor Funkhouser, Assistant Professor Allen, Mr. Brauer.

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. *Lectures three hours a week. First semester.* Assistant Professor Allen.

114. ZOOLOGICAL SEMINAR. (1) Occasional presentation of the results 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) Biological news notes. *Two hours a week. One credit.* Professor Funkhouser, Assistant Professor Allen, Mr. Brauer.

201a. HERPETOLOGY. Systematic and taxonomic studies of the Reptilia. For graduate students only. *Lectures two hours, laboratory two hours a week. First semester.* Professor Funkhouser.

201b. HERPETOLOGY. A continuation of 201a. *Lectures two hours, laboratory two hours a week. Second semester.* Professor Funkhouser.

202a. SYSTEMATIC ENTOMOLOGY. Research work on special groups of insects requiring advanced study in the literature of the subject and designed for students who desire to specialize in entomology. For graduate students only. *Lecture one hour, recitation two hours, laboratory two hours a week. First semester.* Professor Funkhouser.

202b. SYSTEMATIC ENTOMOLOGY. A continuation of 202a. In the second semester special attention is paid to entomotaxy and the bibliography of the group studied. *Lecture one hour, recitation two hours, laboratory two hours a week. Second semester.* Professor Funkhouser.

COLLEGE OF AGRICULTURE

THOMAS P. COOPER, B. S. in Agr., Dean and Director

AGRONOMY

101. METHODS AND RESULTS OF FIELD EXPERIMENTATION. The essentials of reliable field experimentation, the planning and laying out of model experiments, and a study of the results obtained by experiment station workers and other investigators. Special attention is given to the interpretation of field results. Designed for students who expect to teach or engage in experimental work. Prerequisite, Agronomy 1. *Lectures two hours a week. First semester.* Professor Roberts.

105. ADVANCED CROPS. The important crops are studied in more detail than is possible in the standard course in crops. Structure, classification and history of crop plants are given special attention. Soil and climatic adaptation, economics of production, and numerous other fundamental problems of crop production are studied. To as large an extent as possible the best crop literature is reviewed. Some attention is given to the more practical phases of production chiefly to give students an opportunity to become familiar with advances that have been made in the art of crop production in recent years. *Lectures three times a week. Second semester.* Professor Kinney.

106. FIELD CROP IMPROVEMENT. In this course principles of genetics applicable to plant breeding, technique of breeding and development of plant breeding in the past are studied. Classification and inheritance of the various crops and the problems of improvement connected with each are given attention. *Lectures two hours a week. Second semester.* Professor Kinney and Assistant Professor Fergus.

108. ADVANCED SOILS. Reference and classroom work on soil properties, processes and management in relation to plant growth mainly from the theoretical and technical standpoint. Laboratory work in reference to soils, plant and fertilizer materials. The course is designed to give the student some acquaintance with the methods and results of laboratory and greenhouse investigations along soil lines. Prerequisite, Agronomy 2. *Classroom two hours a week, laboratory four hours a week. Second semester.* Associate Professor Karraker.

ANIMAL INDUSTRY

101. ADVANCED DAIRY CATTLE JUDGING. A course designed to train students to become expert judges of dairy cattle. Measurements are made of calves and of mature animals to determine the manner in which an animal expands as it matures. Prerequisite, Animal Industry 17. *Two credits. Second semester.* Professor Hooper.

102. FARM MEATS. The major portion of the work is slaughtering and cutting up beeves, hogs and sheep. A study is made of their minor wholesale and retail cuts, sausage preparation and how to preserve the meat. Either semester. *Four credits.* Associate Professor Wilford.

104. ANIMAL BREEDING. The course in animal breeding consists of a study of the ancestors of domesticated animals, a study of domestication, a study of the origin of the breeds of domestic animals, a study of the methods used by breeders to improve the quality of domestic animals, a study of the modern methods of breeding, inbreeding, crossbreeding, line-breeding, brading, etc., and a study of the best blood lines of the breeds of domestic animals. *Four credits. Second semester.* Professor Anderson.

105. BEEF PRODUCTION. This course involves a study of the development of the beef cattle industry in the United States, together with its present status in this and other beef producing countries. It also includes a study of the present-day methods of management, feeding and judging beef cattle. Beef cattle markets are given consideration. Special problems in beef production are given to members of the class. Prerequisite, Animal Industry 20. *Second semester. Three credits.* Professor Good.

106. PORK PRODUCTION. The proper management, feeding, care and marketing of swine is studied, supplemented with laboratory demonstrations. The breeds and breeding is also touched upon. Prerequisite, Animal Industry 20. *First semester. Three credits.* Associate Professor Wilford.

107. SHEEP PRODUCTION. This course includes a study of the judging, breeding, feeding, management and marketing of sheep and wool. Some time is given to an advanced study of the breeds. Individual problems are assigned. Prerequisites, Animal Industry 17 and 20. *Lecture two hours a week, laboratory two hours a week. First semester. Three credits.* Associate Professor Horlacher.

109. POULTRY JUDGING AND BREEDING. The fundamental genetic principles involved in poultry breeding will be studied. Particular emphasis is laid on the transmission of egg production, broodiness, egg shell color and feather color. The systematic culling and selective flock breeding to increase the production of the flock will be studied. In the laboratory work the time is divided between the judging of birds for exhibition points and egg production. Prerequisite, Farm Poultry Production or Genetics. *Lecture two hours a week, laboratory four hours a week. Four credits. First semester.* Associate Professor Martin.

110. ADVANCED STOCK JUDGING. This is an intensive course in the judging of beef cattle, hogs, sheep and draft horses. Primarily intended

for judging team candidates. Admission by permission of instructor. *First semester. Three credits.* Associate Professor Horlacher.

111. THESIS IN ANIMAL PRODUCTION. Individual work in any phase of animal production in which the student is particularly interested. *Either semester. Three credits.* Staff.

112. ADVANCED POULTRY PRODUCTION. In this course the more advanced problems involved in incubation, brooding, poultry diseases, feeding and flock management will be considered. The laboratory work will consist of the actual operation of incubators and brooders, the treatment of diseased birds and the feeding of the laying flock. Prerequisite, Farm Poultry Production. *Lectures three hours, laboratory two hours a week. Four credits. Second semester.* Associate Professor Martin.

113. LIVE STOCK JUDGING. The principles and practice of judging and selecting beef cattle, sheep, hogs and horses, from the standpoint of the breeder, the feeder and the market. Special emphasis is given to system and method, to the preparation of written reasons, and to the delivery of oral reasons. Prerequisites, Animal Industry 1 and 17. *Second semester. Two credits.* Associate Professor Horlacher.

118. DAIRY MANUFACTURES. A course designed to teach the student science and practice in handling city milk supply, condensing, butter, cheese and ice cream making. Designed to train plant foremen and assistant managers. *First semester. Five credits.* Assistant Professor Barkman.

119. GENETICS. The course consists of a study of the various kinds of variation, including the application of statistical methods to find the mode, median, standard deviation and coefficient of correlation, a study of Mendelism in all its various phases, a study of the physical phases of heredity as it relates to the chromosomes and genes, a study of the determination of sex, a study of Eugenics or the application of Genetics to man. *Three credits. Both semesters.* Professor Anderson.

120. SYSTEMS OF LIVE STOCK PRODUCTION. This course is a general survey of live stock production of the world. An attempt is made to coordinate the practices of one country with those of another, show their relationships to each other, and in the end develop a world viewpoint of the live stock industry. Individual reports and problems are assigned. Prerequisites, Animal Industry 1 and 17. *First semester. Lectures three hours a week. Three credits.* Associate Professor Horlacher.

121. ADVANCED GENETICS. The course consists of a more rigid application of statistical methods to variation, review of the recent genetic literature and a critical study of the application of genetics to plant and animal improvement as well as to human conservation. *Three credits. First semester.* Professor Anderson.

201. ECONOMIC FACTORS INVOLVED IN MEAT PRODUCTION. Individual problems. *Three crelits.* Professor Good.

202. INVESTIGATIONS IN MEATS. Individual problems, pertaining to meat and meat products. *Three credits.* Associate Professor Wilford.

203. RESEARCH IN GENETICS. Individual research problems. *Three credits.* Professor Anderson.

204. INVESTIGATIONS IN FEEDING DAIRY ANIMALS. *Three credits.* Professor Hooper.

205. INVESTIGATIONS IN THE BREEDING AND MANAGEMENT OF LIGHT HORSES. *Three credits.* Professor Anderson.

206. RESEARCH IN POULTRY. Special problems are assigned involving original investigation on the part of the student. *Either semester. Three credits.* Associate Professor Martin.

207. INVESTIGATIONS IN WOOL. Individual problems, giving the student an opportunity to do original investigational work. *Three credits.* Professor Horlacher.

208. RESEARCH IN ANIMAL BREEDING. Individual problems. *Three credits.* Professor Anderson.

209a. SEMINAR. *One credit. First semester.* Professor Good.

209b. SEMINAR. *One credit. Second semester.* Professor Good.

FARM ECONOMICS

COURSES IN MARKETING

108. MARKETING. A study of the principles and methods of marketing farm products. Consideration is given to the services involved in marketing such as assembling, grading, transportation, warehousing, distribution, selling and financing; the methods of marketing at country points and in central markets; the classes and functions of middlemen; marketing specific commodities; market price and price-making factors; market information; market risks; future trading; marketing costs; grades and standards; cooperative marketing; and weaknesses in marketing methods and remedies proposed. Prerequisite, Economics 1a. *Lecture three hours a week. First semester.* Professor Jesness.

109. COOPERATIVE MARKETING. A study of principles, methods and problems involved in the cooperative marketing of farm products. The plans employed, progress made and problems encountered for different classes of farm products are studied. Consideration is given to pooling plans and methods, the essentials for success, membership contracts, forms of organization, methods of financing, organization procedure, cooperative laws, incorporation, relation to anti-trust legislation and monopolistic aspects. Prerequisite, Farm Economics 108. *Lectures three hours a week. Second semester.* Professor Jesness.

110. ADVANCED MARKETING. An advanced course designed to take up special aspects of marketing farm products. Special problems are assigned for class reports and as a basis for extensive written reports by the individual members of the class. Prerequisite, Farm Economics 108. *Lectures three hours a week. First semester.* Professor Jesness.

111. AGRICULTURAL PRICES. A study of the factors influencing prices of farm products, of price movements and trends, and of price relationships. Factors which affect prices are reviewed and considera-tion is given to the possibilities and limitations of price fixing. Market price determination for various commodities is considered. Methods of price comparison, as illustrated by typical price indexes, are studied. Long time price movements and cyclical tendencies are reviewed. Methods of assembling and disseminating crop and market information, and progress in the formulation of outlook statements and in price forecasting are reviewed. Prerequisite, Farm Economics 4. *Lectures three hours a week. First semester.* Professor Jesness.

112. FARM FINANCE. A study of the principles involved in the financing of the production and marketing of farm products. Credit needs of agriculture, including short time, intermediate and farm mort-gage credit requirements of the farmer are studied. The organization and operation of the farm loan system, and other agencies which aid in satisfying the credit needs of agriculture are considered. Methods of financing marketing operations, including the movement and storage of products and the financing problems of cooperative marketing as-sociations are considered. Prerequisite, Farm Economics 4. *Lectures three hours a week. S econd semester.* Professor Jesness.

201a. RESEARCH IN MARKETING AND COOPERATION. Open to gradu-ate students who have the necessary training and ability to carry on work on individual problems. The course consists of individual work on some selected marketing problem and aims to acquaint the student with the literature dealing with the problem and to give him training in obtaining and analyzing facts with respect to specific problems and draw proper conclusions therefrom. *Three hours a week. First semes-ter.* Professor Jesness.

201b. RESEARCH IN MARKETING AND COOPERATION. A continuation of 201a. *Three hours a week. Second semester.* Professor Jesness

FARM MANAGEMENT AND ALLIED SUBJECTS

101. TYPES OF FARMING. A course dealing with the physical, bio-logical and economic factors that determine the adaptability of specific crop and live stock enterprises to the various agricultural regions of the United States. Especial attention is given to the character and extent of farming in the different sections of Kentucky. Prerequisite, Farm Economics 1. *Lectures two hours a week. First semester.* Pro-fessor Nicholls.

102a. FARM MANAGEMENT RESEARCH. An inquiry into the development of farm management problems, directed towards the formulation of specific plans for their solution. There will be a review of selected literature, special field studies will be conducted and an intensive analysis made of the related Kentucky farm survey records that are available. *Laboratory two hours a week. First semester.* Professor Nicholls.

102b. FARM MANAGEMENT RESEARCH. A continuation of 102a. *Laboratory two hours a week. Second semester.* Professor Nicholls.

103a. 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 student reports, are held at each meeting. *Two hours a week. First semester.* Farm Economics Staff.

103b. AGRICULTURAL ECONOMICS SEMINAR. A continuation of 103a. *Two hours a week. Second semester.* Farm Economics Staff.

104. ADVANCED FARM COST ACCOUNTING. A course dealing with the problems arising in connection with the various processes in agricultural cost finding. Developments of theory will be considered, and attention will be devoted to posting, summarizing and analyzing complete cost records. Prerequisite, Farm Economics 3. *Laboratory four hours a week. First semester. Repeated second semester.* Mr. Finn.

106. 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. Weekly 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 1. *Lecture one hour, laboratory two hours a week. Second semester.* Professor Nicholls.

HOME ECONOMICS

104. PROBLEMS IN TEXTILES. Study of physical and chemical properties of major and minor fibers. Social and economic aspects of textile and clothing trades. Laboratory work includes microscopy of fibers, physical tests and quantitative determination of fabric content. Term papers based upon individual problems. *Lectures two hours, laboratory four hours a week. Second semester.* Assistant Professor Gard.

105. SEMINAR IN NUTRITION. Investigations of recent research on normal nutrition. *One hour a week. Second semester.* Professor Hopkins.

106. TEXTILE AND CLOTHING SEMINAR. Investigation of special textile and clothing problems. *One hour a week. First semester.* Assistant Professor Gard.

107a. EXPERIMENTAL COOKERY. Study of the application of chemical methods to the problem of cookery. It may include observations on affect of pH and determinations of losses in vegetable cookery; experimental work on batter and dough mixtures with special emphasis on the properties of strong and weak flours; shortening power of fats, properties of emulsions, comparison of slow and quick acting baking powders; an investigation of the jellying properties of fruit juices; analyses of flavoring extracts for adulteration. *Lectures two hours, laboratory six hours a week.* Professor Hopkins.

107b. EXPERIMENTAL COOKERY. A continuation of 107a. *Lectures two hours, laboratory six hours a week.* Professor Hopkins.

109. NUTRITION. Investigations in nutrition and metabolic processes of the body. It includes gastric analyses, analyses of human and cow's milk, sugar tolerance in tests, protein and mineral balance experiments on human subjects, biological tests for vitamines and protein of various foods.

110. CHILD CARE AND TRAINING. Survey of the field of child care and training from pre-natal life through the pre-school period. It includes consideration of problems of pre-natal life and infancy; standards for normal growth; breast and artificial feeding; habit formation; general care and hygiene. *Lectures two hours a week. Second semester.* Miss Bennett.

121. THESIS IN FOOD, NUTRITION, HOUSEHOLD MANAGEMENT, CLOTHING OR TEXTILES. Special problems in undergraduate research.

HORTICULTURE

102a. POMOLOGY. A detailed study of the stone fruits and small fruits including the history, botany, geography and an interpretation of cultural practice in terms of recent investigations. Prerequisites, Botany 1a and 1b, Horticulture 1. *Lectures three hours, laboratory two hours a week. Second semester.* Professor Olney.

102b. POMOLOGY. A critical study of commercial grape and apple culture, including history, botany, geography, factors affecting fruitfulness, review of recent investigations on culture and pest control, harvesting and storing. Prerequisites, Botany 1a and 1b, Horticulture 1. *Lectures three hours, laboratory two hours a week. First semester.* Professor Olney.

107. VEGETABLE GARDENING. A study of the principles of vegetable gardening, classification and groups of vegetable crops, construction and management of hotbeds and cold frames, garden planning, sowing

and planting, cropping systems, rotations, cultural methods, harvesting and storing. Prerequisites, Botany 1a and 1b. *Lectures three hours, laboratory two hours a week. Second semester.*

109. MARKET GARDENING. Devoted to the study and practice of the principles involved in the commercial production and utilization of vegetable crops. A critical study is made of the principal vegetable crops of commercial importance, including propagation, choice of varieties, soil adaptation, soil preparation, fertilizing, management, pest control, harvesting and storing methods, and preparation of products for market. Prerequisites, Botany 1a and 1b, Horticulture 107. *Lectures two hours, laboratory four hours a week. Second semester.*

VETERINARY SCIENCE

ANATOMY OF DOMESTIC ANIMALS. The department offers to graduates, for minor work only, work in Anatomy of Domestic Animals. Instruction in anatomy is by lectures, recitation, demonstration and dissection. The objects of the lectures are to present facts of general morphology of the horse and other domestic animals, and to show the correlation of structure and function of the various organs of the body. The student will be required to dissect all parts o fthe horse, or ox, and such parts of other domestic animals as may be necessary to show the variation met with in different species of domestic animals. The work is confined wholly to gross anatomy and is taken up by the system. Anatomy of bones and joints, digestive apparatus, respiratory system, heart and blood vessels, nervous system, genito-urinary system, etc. Dr. Dimock.

PHYSIOLOGY OF DOMESTIC ANIMALS. The department offers to graduate students, for minor only, work in Physiology of Domestic Animals. Instruction is by lectures, recitation and laboratory. The course is outlined so that the work given will aid the student in comprehending the vital processes of the animal body. The work is taken up by systems, the normal and vital function of each system being taken up in detail and the correlation and dependence of the function of one system upon another is emphasized. In the laboratory work emphasis is placed upon processes of absorption, metabolism, excretion, etc., such as digestion, respiration, blood, urine analysis, milk and the muscular and nervous systems. This course gives the student a good foundation to understand the principles of feeding, care, etc.

DISEASES OF DOMESTIC ANIMALS. The department offers to graduate students, as a minor only, work in Diseases of Domestic Animals. It is essential that the student has had some work in bacteriology, zoology and physiology. The subject matter of the course deals with the various infectious and parasitic diseases of animals, their distri-

bution, general nature, methods of dissemination, sanitation and prevention. The work is presented from the standpoint of hygienic and preventive medicine, special emphasis being placed on those diseases that are transmissable to man. No laboratory work is offered for graduate students. *Lectures, recitation and reference reading.* Dr. Dimock.

COLLEGE OF COMMERCE

EDWARD WIEST, A. M., Ph. D., Dean

102. LABOR PROBLEMS. A study of the labor market in its industrial phases, including such directly related topics as immigration, unemployment and labor organizations. Prerequisite or concurrent, course 1. *Three hours a week. Second semester.* Associate Professor Leland.

103. TRANSPORTATION. Growth of the railway net; pools and traffic associations; principles and practice of rate-making as exemplified by the decisions of the Interstate Commerce Commission and the courts; state and federal regulation, with comparison of policies in foreign countries. Prerequisite or concurrent, course 1. Given in alternate years. *Three hours a week. Second semester.* Professor Wiest.

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. Attention will be given to the current problems in taxation. Prerequisite, course 1. *Three hours a week. First semester.* Associate Professor Leland.

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 and comparison with those of foreign countries; foreign exchange. Prerequisite, course 1. *Three hours a week. Second semester.* Professor Wiest.

106a. ADVANCED ACCOUNTING. Corporation accounting, cost accounting, municipal accounting and auditing. Prerequisites, courses 7a, 7b and 117. *First semester.* Assistant Professor Eversole.

106b. ADVANCED ACCOUNTING. *Second semester.* Assistant Professor Eversole.

107. STATISTICAL METHOD. Training in the process of treating multiple phenomena with mathematical exactitude. The methods are illustrated with material from the fields of psychology, education, economics and sociology. An essential course for specialists in these fields. Not open to freshmen. *Three hours a week. First semester.* Associate Professor Leland.

108. INSURANCE. Fundamental aspects of insurance; principles and their main application; nature of the contract; policies and premiums; life, casualty, health, fire, marine and other hazards. Prerequisite or concurrent, courses 1 and Mathematics 14. *Three hours a week. Second semester.* Associate Professor Leland.

109a. BUSINESS LAW. A course designed to fill the need for an elementary training in business law. It includes a survey of the prin-

ciples of contracts, sales, bills and notes, and that portion of the law of torts applicable to business practices. Not open to freshmen. *Three hours a week. First semester.* Associate Professor Leland.

109b. BUSINESS LAW. *Three hours a week. Second semester.* Associate Professor Leland.

110. BUSINESS CYCLES. In this course a study is made of the nature and characteristics of the economic factors which underlie the cyclical fluctuations in business conditions. Attention is also directed toward the methods of business and investment forecasting and their practical application. Prerequisites, courses 1 and 107. *Three hours a week. Second semester.* Associate Professor Leland.

111. PRODUCTION AND MARKETING. A functional study of the market organization with special emphasis on the marketing of manufactured products. Considerable time is spent in the discussion of retail types such as the general store, chain store, department store and mail order house. Special attention is devoted to market finance, market risk, market news, competition and prices, market price, price maintenance and unfair competition and the cost of marketing. Prerequisite or concurrent, course 1. *Three hours a week. First semester.* Assistant Professor McIntyre.

112a. INDIVIDUAL WORK IN ECONOMICS. In this course a selected group of advanced students who have at least a standing of 2 are given special problems for intensive investigation. The student is expected to do more work than the usual amount required per credit hour. Each student makes reports of his studies to the class which is conducted on a seminar basis. Prerequisite, course 1. *Two hours a week. First semester.* Professor Wiest.

112b. INDIVIDUAL WORK IN ECONOMICS. *Second semester.* Professor Wiest.

113. AUDITING. This course is designed especially for those who expect to enter the accounting profession. Emphasis is placed on 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. *Three hours a week. Second semester.* Assistant Professor Eversole.

114. SALESMANSHIP. Among the problems considered are the formulation of selling policies, the actual selling process, the creation of effective demand, sales campaigns, selecting and training salesmen and kindred subjects. Prerequisite or concurrent, course 111. *Three hours a week. Second semester.* Assistant Professor McIntyre.

115. CONTEMPORARY ECONOMIC THOUGHT. A survey of current literature of theoretical economics. Special emphasis is placed on the-

ories of value and distribution. Prerequisite, course 1. *Three hours a week. First semester*. Professor Wiest, Associate Professor Leland, Associate Professor Jennings.

116. BUSINESS ORGANIZATION. A study of business organization primarily from a social point of view. The course traces the origin and development of forms of business organization; treats the advantages and disadvantages of the various forms; includes a study of the trust of combination movement and its effects upon society. Prerequisite or concurrent, course 1. *Three hours a week. First semester*. Assistant Professor McIntyre.

117. CORPORATION FINANCE. A study of the corporation primarily from the internal point of view. The course treats stocks and bonds; develops sound fiscal principles concerning the issues of securities, the management of the corporate income, the disbursement of dividends, the creation of sinking funds; and discusses reorganization procedure. Prerequisite or concurrent, course 1. *Three hours a week. First semester*. Professor Wiest.

118. COST ACCOUNTING. This course deals with the place of cost accounting in the general field of accounting. Special records and cost statistics are considered. Application to particular businesses are made. Prerequisites, courses 7a and 7b. *Three hours a week. First semester*. Assistant Professor Eversole.

119. PRINCIPLES OF RETAILING. This course deals with the fundamental problems of the retail merchant. Among the topics considered are factors of selecting a business location, internal layout, departmentalization, merchandising control, store policies toward the public, training and management of personnel, and related subjects. Prerequisite or concurrent, course 111. *Two hours a week. Second semester*. Assistant Professor McIntyre.

120. COMMERCIAL AND AGRICULTURAL ORGANIZATION. This course presents a survey of economic groups and deals with their economic and social relationships. It also analyzes the business organization aspects of farmers' organizations, chambers of commerce, trade and industrial associations. Prerequisite or concurrent, course 1. *Three hours a week. Second semester*. Professors Wiest and Eversole.

121. ECONOMIC HISTORY OF THE UNITED STATES PRIOR TO 1860. This course is intended primarily as an economic background for social science students. It studies in detail colonial industry and English commercial acquisitions, agriculture, manufactures. tariff, labor, internal improvements, commerce and money and banking. Open to juniors, seniors and graduates. *Two hours a week. First semester*. Associate Professor Jennings.

122. ECONOMIC HISTORY OF THE UNITED STATES SINCE 1860. This course is intended to supply an economic background for students of

modern conditions. It studies in detail population growth, immigration, territorial acquisitions, agriculture, manufactures, industrial combinations, tariff, labor, commerce, transportation facilities, money and banking and conservation. Open to juniors, seniors and graduates. *Two hours a week. Second semester.* Associate Professor Jennings.

123. ADVANCED ECONOMIC HISTORY OF EUROPE. This course is intended to serve as an economic background for students interested in European affairs. It discusses population, immigration, labor, agriculture, industry and finance and the effects of the various lines of development upon national life. Open to upper classmen and graduates. *Two hours a week. First semester.* Associate Professor Jennings.

202a. 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. Weekly reports will be submitted at hours to be arranged. *First semester.* Professors Wiest, Leland and Jennings.

202b. SEMINAR. *Second semester.* Professors Wiest, Leland and Jennings.

203. HISTORY OF ECONOMIC THOUGHT. The history of economic thought with special reference to the theories of value and the distribution of wealth. *Three hours a week. Second semester.* Professor Wiest.

COLLEGE OF EDUCATION

WILLIAM S. TAYLOR, Ph. D., Dean

AGRICULTURAL EDUCATION

180. METHODS OF TEACHING VOCATIONAL AGRICULTURE. A course for teachers and prospective teachers of vocational agriculture. The course deals with the nature and purpose of vocational education in agriculture, the selection and organization of teaching content, the application of suitable methods of teaching to the various courses and subjects in vocational agriculture. Part-time courses for adults and for young men who have dropped out of school prematurely are also treated. *Three credits.* Mr. Carsie Hammonds.

183. RURAL SCHOOL PROBLEMS. Designed particularly to meet the needs of those preparing for the combination position of principal and agriculture teacher. Problems of organization, management curriculum adjustments, teaching personnel, buildings and grounds, equipment and school finances studied in specific applications. Emphasis placed on proper relation of school and agriculture teacher to extension workers and their programs, farmers' organizations and their programs, and how to conduct school and community affairs. *Three credits.* Dr. Jesse E. Adams.

184. COMMUNITY STUDIES AND THEIR APPLICATION. The aim is to encourage extramural contacts for the teacher in the rural community. Careful study made of the social, economic and other factors affecting rural life and welfare. *Two credits.* Dr. Jesse E. Adams.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

108. PUBLIC EDUCATION IN THE UNITED STATES. An intensive study of educational problems in Kentucky and a comparative study of Kentucky's school laws, regulations, and decisions with those of other states. *Three credits.* Mr. Wellington Patrick.

113. STATE AND COUNTY SCHOOL ADMINISTRATION. The tendencies toward centralization in state and county administration will be analyzed and evaluated. A study of the county is made with particular reference to its operation in Kentucky. *Three credits.* Dr. Jesse E. Adams.

115. ADMINISTRATION AND SUPERVISION. A general course in school administration in smaller cities. Principles of constructive supervision developed. *Three credits.* Professor Floyd W. Reeves.

125. THE SUPERVISION OF ELEMENTARY INSTRUCTION. Designed especially for teachers who are preparing for work in supervision and for supervisors and principals who are interested in a more thorough

understanding of the fundamental principles that underlie the super-
vision of instruction in the elementary schools. *Three credits.* Pro-
fessor L. B. McMullen.

126. THE JUNIOR HIGH SCHOOL. Designed to give to school admin-
istrators in general the plans underlying junior high school organiza-
tion, the development of junior high schools in the United States and
their place in the public school program of the state. *Three credits.*
Professor Floyd W. Reeves.

131. FINANCING PUBLIC EDUCATION. A critical study of the costs
of education and of methods for providing funds to meet these costs.
Three credits. Professor Floyd W. Reeves.

132. HIGH SCHOOL ADMINISTRATION. A course in the organization
and management of high schools, with particular reference to Ken-
tucky high schools. *Three credits.* Professor M. E. Ligon.

EDUCATIONAL PSYCHOLOGY

119. FOUNDATIONS OF ELEMENTARY INSTRUCTION. A detailed study
of the reaction of children to the subject matter of elementary educa-
tion. *Three credits.* Professor L. B. McMullen.

122. EDUCATIONAL TESTS AND MEASUREMENTS. A course in the
theory and practice of measuring educational problems and processes.
Three credits. Professor Floyd W. Reeves.

123. STATISTICAL METHODS IN EDUCATION. A course in statistics.
This is a course that deals with statistics in their relation to educa-
tion. Designed primarily to aid students in statistical procedure in
education. *Three credits.* Professor Floyd W. Reeves.

140. PHILOSOPHY OF EDUCATION. A study of the philosophical writ-
ings of modern educational philosophers. *Three credits.* Professor
L. B. McMullen.

HISTORY AND PHILOSOPHY OF EDUCATION

110. MORAL AND ESTHETIC EDUCATION. An attempt is made in this
course to familiarize the teachers through lectures and stereopticon
slides with the various types of architecture and schools of sculpture
and painting. It is a course in appreciation of art for others. *Three
credits.* Professor J. T. C. Noe.

117a. HISTORY OF EDUCATION. This course is a survey of the his-
tory of education from Greece to the beginning of education in Amer-
ica. *Three credits.* Professor J. T. C. Noe.

117b. HISTORY OF EDUCATION. A continuation of 117a. *Three
credits.* Profesor J. T. C. Noe.

120. GREAT EDUCATORS AND THEIR WORK. A study of the lives and
writings of the world's educators to enable the student to appreciate

more fully the ideals, attitudes and contributions to society of the men and women in education who have served best. *Three credits*. Professor J. T. C. Noe.

121. HISTORY OF EDUCATION IN THE UNITED STATES. A course in the history of the development of the public school system in the United States. It is designed to give a background for the appreciation of the aims and purposes of modern public education. *Three credits*. Professor J. T. C. Noe.

220. COMPARATIVE EDUCATION. A course giving comparisons of systems of education. *Three credits*. Professor J. T. C. Noe.

HOME ECONOMICS EDUCATION

160. THE TECHNIQUE OF TEACHING HOME ECONOMICS. *Three credits*. Miss Julia Hurd.

163. CURRENT PROBLEMS OF HOME MAKING EDUCATION. A study of aims based on the needs and interests of girls in different types of schools; recent developments in home economics education; the relation of the home economics teacher and department to the rest of the school; coordination with the home; community activities contributing to home making instruction; publicity and promotional work. *Three credits*. Miss Julia Hurd.

165. PROBLEMS IN VOCATIONAL HOME ECONOMICS EDUCATION. A professional course dealing with aims, methods and contemporary secondary educational theories and practices. Designed for those already engaged in teaching home economics. *Three credits*. Miss Julia Hurd.

INDUSTRIAL EDUCATION

170. THE PART-TIME GENERAL CONTINUATION SCHOOL. This is a course designed to meet the needs of teachers and administrators of part-time legislation. It includes the supplying of proper content, a discussion of methods and instructional management, and the finding of the auxiliary agencies essential to the teaching of part-time classes in urban school systems. *Three credits*. Professor A. N. May.

171. VOCATIONAL EDUCATION. (Information course.) Designed to inform students, teachers, administrators, welfare workers and laymen in general of the vocational education movement in our country and abroad. *Three credits*. Profesor A. N. May.

PRINCIPLES AND PRACTICES OF EDUCATION

105. THE TECHNIQUE OF TEACHING. This course deals with methods of teaching in the high school. Motivation and the project method will be given special attention. *Three credits*. Professor M. E. Ligon.

106. OBSERVATION AND PRACTICE TEACHING. Practice work in th
training school.

109. PRINCIPLES OF SECONDARY EDUCATION. This course aims t
develop the fundamental principles of secondary education. It wil
include a discussion of the development of the secondary curriculu
and its relationship to college. *Three credits*. Professor M. E. Ligon

114a. EDUCATIONAL SOCIOLOGY. A study of the development of th
social mind with special reference to education. *Two credits*. Profes
sor W. S. Taylor.

114b. EDUCATIONAL SOCIOLOGY. A continuation of 114a. *Two
credits*. Professor W. S. Taylor.

127. PROBLEMS IN CURRICULUM BUILDING. A critical study of th
content of the curriculum and of the principles which should guide u
in curriculum building. *Three credits*. Professor W. S. Taylor.

128. PRINCIPLES OF METHOD. This course deals with the develop
ment and formulation of the fundamental principles of teaching base
upon the psychology of the learning process and upon the more recen
developments in the theories of education relative to the function of th
school. *Three credits*. Professor M. E. Ligon.

129. THE TEACHING OF HIGH SCHOOL MATHEMATICS. A study of th
objectives of high school mathematics; the course and content of each
the adjustment of mathematics courses to high schools of different size
and high schools operating under the different socvial conditions;
careful study of methods and materials used in teaching mathematic
Two credits. Mis Mary Beall.

134. ENGLISH IN THE HIGH SCHOOL. A study of the teaching
English. *Two credits*. Miss Grace Anderson.

135. SOCIAL SCIENCES IN THE HIGH SCHOOL. A study of the teach
ing of the social sciences. *Two credits*. Miss Anna Peck.

136. BIOLOGICAL SCIENCES IN THE HIGH SCHOOL. A study of th
teaching of the biological sciences on the secondary level. *Two credit*
Mr. A. B. Crawford.

137. PHYSICAL SCIENCES IN THE HIGH SCHOOL. A study of th
teaching of the physical sciences on the secondary level. *Two credit*
Mr. A. B. Crawford.

138. LATIN IN THE HIGH SCHOOL. A study of the teaching of Lati
on the secondary level. *Two credits*. Miss Mary West.

139. FRENCH IN THE HIGH SCHOOL. A study of the teaching
French on the secondary level. *Two credits*. Miss Mary West.

ADMINISTRATION AND SUPERVISION

125. SUPERVISION OF ELEMENTARY INSTRUCTION. Designed especial
for teachers who are preparing for work in supervision or who desi
a better understanding of the relationship between teacher and supe

visor, and for principles and supervisors who are interested in a more thorough understanding of the fundamental principles that underdlie thes upervision of instruction in the elementary schools. *Three credits.* Professor L. B. McMullen.

126. THE JUNIOR HIGH SCHOOL. Course designed to give to school administrators in general the plans underlying junior high school organization, the development of junior high schools in the United States and their place in the public school program of the state. *Three credits.*

142. ADMINISTRATION AND SUPERVISION OF VILLAGE AND CONSOLIDATED SCHOOL. A course dealing with administrative problems as related to small school units.

143. COUNTY SCHOOL ADMINISTRATION. This course deals with the problems of the school administrator and is especially designed from the viewpoint of the county superintendent. *Three credits.* Professor J. E .Adams.

144. THE RURAL HIGH SCHOOL. Its organization and curriculum. Discusses (1) the most efficient types of organization for rural high schools and (2) curriculum building in the rural high school. *Three credits.* Professor J. E. Adams.

145. RURAL SCHOOL SUPERVISION. Work in this course is taken up from the viewpoint of the supervisor in the rural field. *Three credits.* Professor J. E. Adams.

146. SCHOOL BUILDINGS AND EQUIPMENT. A study of modern standards for school buildings and their equipment; actual scoring of buildings done. *Two credits.* Professor L. B. McMullen.

147. KENTUCKY SCHOOL LAW. *Two credits.* Professor F. W. Reeves.

222. THESIS COURSE. A course for graduate students who are writing theses. Professor W. S. Taylor.

COLLEGE OF ENGINEERING

F. PAUL ANDERSON, M. E., Dean

CIVIL ENGINEERING

Prerequisites for graduate work: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. These courses are offered to graduates and to such practicing engineers as may be qualified to pursue them. For major work, a candidate must hold a baccalaureate degree in civil engineering.

201. CONSTRUCTION. Advanced work in plant and reinforced concrete. Lectures, recitations, reading, report writing and designing. *Twenty hours a week. Throughout the year.* Professor Terrell.

231. HIGHWAY ENGINEERING. Advanced courses, designed for graduate civil engineers who wish to enter the field of highway engineering. Lectures, recitations, reading, laboratory work and design. *Twenty four hours a week. Throughout the year.* Professor Terrell.

241. RAILROAD ENGINEERING. Advanced work in location, construction and maintenance. Lectures, recitations, reading and report writing. *Fifteen hours a week. Throughout the year.* Associate Professor Newman.

251. SANITARY ENGINEERING. Advanced work in sewer systems and disposal plants. (Course in water analysis, sewage analysis and bacteriology should be taken in connection with this course.) Lectures, recitations, reading, report writing, design and laboratory work. *Twenty hours a week. Throughout the year.* Professor Terrell.

271. STRUCTURAL ENGINEERING. Advanced work in theory of structures. Detail drawing, lectures, recitations, report writing. *Eighteen hours a week. Throughout the year.* Professor Carrel.

ELECTRICAL ENGINEERING

201a. ADVANCED ALTERNATING CURRENTS. *Lectures and recitations five hours, laboratory ten hours, and drawing ten hours a week. First semester.* Professor Freeman.

201b. ADVANCED ALTERNATING CURRENTS. A continuation of course 201a. *Lectures and recitations five hours, laboratory ten hours, and drawing ten hours a week. Second semester.* Professor Freeman.

202. TELEPHONE ENGINEERING. *Lectures and recitations five hours, laboratory ten hours, and drawing ten hours a week. First semester.* Professor Freeman.

203. ILLUMINATION. *Lectures and recitations five hours, laboratory ten hours, and drawing ten hours a week. Second semester.* Professor Freeman.

MECHANICAL ENGINEERING

201a. AUTOMOTIVE ENGINEERING. *Recitations five hours a week, design ten hours a week, and laboratory fifteen hours a week. First semester.* Professor C. H. Anderson.

201b. AUTOMOTIVE ENGINEERING. A continuation of 201a. *Recitations five hours a week, design ten hours a week, and laboratory fifteen hours a week. Second semester.* Professor C. H. Anderson.

202a. POWER PLANTS. *Recitations five hours a week, design fifteen hours a week. First semester.* Dean Anderson, Assistant Professor O'Bannon.

202b. POWER PLANTS. A continuation of 202a. *Recitations five hours a week, design fifteen hours a week. Second semester.* Dean Anderson, Assistant Professor O'Bannon.

203a. HEATING AND VENTILATING. *Recitations five hours a week, design twenty hours a week. First semester.* Dean Anderson, Assistant Professor O'Bannon.

203b. HEATING AND VENTILATING. A continuation of 203a. *Recitations five hours a week, design twenty hours a week. Second semester.* Dean Anderson, Assistant Professor O'Bannon.

GRADUATE STUDENTS

FELLOWS

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CHARLES A. LOUDERMILK	Bowling Green
EUNICE J. M. MURBACH	Lexington
CHARLES T. RAZOR	Flemingsburg
HENRY B. SIMPSON	Sturgis
MARY AGNES GORDON	Lexington

SCHOLARS

ARTHUR L. COOPER	Mt. Vernon
GEORGE D. HAGAN	Brandenburg
B. FRANKLIN HALL	Georgetown
CLARIBEL KAY	Springfield, Ohio
THELMA L. MACINTYRE	Springfield
VADA LEE NELSON	Pittsburg, Texas
ROY NEWTON	Wilmore
TROY L. PERKINS	Hindman
HALBERT H. THORNBERRY	Corydon
JOHN FRED TILL, JR.	Orangeburg, S. C.

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REGISTER OF STUDENTS

Name	Major	Address
ANDREW, THURMAN	Mathematics	Grand Forks, N.D.
AKERS, L. R.	Education	Wilmore
ANDERSON, A. L.	Education	R.R. 4, Lexington
APPLEGATE, MRS. H. S.	English	Lexington
BARKER, MRS. ADELAIDE	History	Wilmore
BARKER, EARL P.	Ancient Languages	Wilmore
BROWN, MARION C.	Engineering	Wilkinsburg, Pa.
BRYANT, G. O.	Mathematics	Carlisle
BAUMGARTEN, G. W.	English	Lexington
BOTTS, MARY ETHEL	Physics	Lexington
BRADLEY, EMMETT	Education	Lexington
BRENNER, WILLIAM L.	Mathematics	Lexington
BREWER, GRACE	Mathematics	Lexington
BRONSTON, TOMIE CLARKE	Education	Richmond
BURROUGHS, L. R.	Engineering	Wilmore
CANTRELL, ROY H.	History	Williamstown
CARD, DANA	Economics	Lexington
CASSITY, G. W.	Education	Georgetown
CHAMBERS, J. L.	Education	Morehead
CHARLES, CECIL	Psychology	Henderson
CLARK, JULIA	Education	Paris
CLAYTON, J. L.	Mathematics	Madisonville
COOPER, ARTHUR L.	Bacteriology	Mt. Vernon
COOPER, MARY HESTER	Mathematics	Lexington
DARNABY, ERNEST H.	Education	Clintonville
DEAN, LUTHER EDWARD	Education	Lewisport
DORSEY, STANTON L.	Bacteriology	Lexington
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DURBIN, MRS. VIRGINIA O.	Psychology	Lexington
FLEGE, R. K.	Chemistry	Williamstown
FILBECK, CLYDE	Economics	Benton
FREEMN, MAX	English	Burgin
GAY, ELIZABETH	English	Lexington
GIBBONS, CLYDE ROGERS	Engineering	San Francisco, Californnia
GIOVANNOLI, LEONARD	Zoology	Lexington
GLADDEN SANFORD C.	Physics	Oxford, Miss.
GLASS, MATTIE MAE	Education	Nicholasville
GORDON, MARY AGNES	Education	Lexington
GORMLEY, ANN	Education	Lexington
GUERIN, F. P.	Education	Murray
HAGAN, GEORGE	History	Brandenburg

Name	Major	Address
HALL, B. FRANKLIN	Greek and Latin	Georgetown
HARRIS, W. J.	Animal Industry	Lexington
HENRY, R. G.	Physics	Lexington
HERRING, PEARL	Latin	Lexington
HILL, N. M.	Economics	Williamsburg
HILLEN, WILLIAM G.	Engineering	Louisville
HINKLE, IOLENE	Ancient Languages	Wilmore
HORLACHER, L. J.	Psychology	Lexington
HORLACHER, VANETA THOMAS	Education	Lexington
HUDDLESTON, BETH	History	Fulton
JAGGERS, RICHARD E.	Education	Richmond
JENNINGS, FRANCES	Sociology	Cynthiana
JOHNSON, EDWIN C.	Economics	Lexington
JOHNSON, ZACHARY TAYLOR	History	Wilmore
JONES, JAMES W.	Economics	Lexington
JONES, S. JAMESON	Animal Husbandry	Mt. Sterling
KAVANAUGH, GEORGE	Economics	Blackford
KAY, CLARIBEL	English	Springfield, Ohio
KENYON, JAY B.	Education	Wilmore
KIEVIT, BEN	Physics	Lexington
KING, HELEN	English	Lexington
KINTNER, O. C.	Education	Wilmore
LINK, H. F.	Agricultural Economics	Lexington
LONG, MRS. JAMIE B.	Economics	Richmond
LOUDERMILK, CHARLES A.	Animal Husbandry	Bowling Green
LOVELY, LUCILE	Education	Lexington
LUCE, ESTHER FAITH	English	Wilmore
McINTEER, BERTHUS	Botany	Lexington
MACINTYBE, THELMA	Zoology	Springfield
McCHESNEY, H. F.	Education	Mt. Vernon
McCLURE, VIRGINIA	Education	Lexington
McKEE, EARL S.	History	Hillsboro
McMURTRY, J. S.	Education	Vine Grove
McNAMARA, IRENE	English	Mt. Sterling
MALOTT, LEROY	Sociology	Georgetown
MATHENY, G. E.	Physics	Ashland
MATHEWS, RUTH	English	Lexington
MAXWELL, SAMUEL A.	Education	Wilmore
MESSER, GEORGE D.	Education	Barbourville
MILLER, REED	Animal Industry	Springfield
MITCHELL, MARION J.	Education	Nicholasville
MOBLEY, H. W.	Mathematics	Bruin
MOORE, WILLIAM J.	Education	Midway

Name	Major	Address
MOORE, WILLIAM JAMIE	Education	Harrodsburg
MORRISON, MARJORIE	Chemistry	Louisville
MURBACH, MRS. JANET	French	Lexington
NANKIVELL, D. W.	Education	Wilmore
NELSON, VADA LEE	Mathematics	Pittsburg, Texas
NEWTON, MRS. MAUDE	History	Wilmore
NEWTON, RAYMOND	Education	Wilmore
NEWTON, ROY	Education	Wilmore
OWEN, JOHN I.	English	Gilbertsville
PARDUE, LOUIS A.	Physics	Scottsville
PAYNE, VIRGIL FRANCIS	Education	Lexington
PECK, ANNA B.	History	Falmouth
PERKINS, TROY	English	Hindman
PERSON, AMY	English	Wilmore
PUNTNEY, ALBERT T.	English	Wilmore
PYLES, HENRY M.	Zoology	Winchester
RAZOR, CHARLES T.	Physics	Flemingsburg
REDFORD, BLAND Y.	Education	Glasgow
ROBERTS, BYRON M.	Economics	R. R. No. 3, Paris
ROBERTS, NAN	Hygiene	Soddy, Tenn.
SEAY, MAURICE F.	Education	New Castle
SELLARDS, HENRY G.	Marketing	Lexington
SHACKLETTE, RACHELLE	Special	Brandenburg
SCHNICK, BLAINE W.	English	May Port, Penn.
SIMPSON, HENRY BENTON	History	Sturgis
SHACKELFORD, LOUIS BYRON	English	Lexington
SIBERT, MARTIN DAVID	Education	Bowling Green
SMITH, FRANCES	English	Lexington
SOWARD, CLARENCE G.	Mathematics	Maysville
STREYFFELER, DEWITT	Mathematics	Le Mars, Iowa
TAGGART, JOHN D.	English	Bloomfield
THOMPSON, J. W.	Psychology	Georgetown
THORNBERRY, H. H.	Plant Pathology	Corydon
TILL, JOHN FRED	Animal Industry	Orangeburg, S. C.
TOHMAN, J. A.	Psychology	Georgetown
TOLAR, M. B.	Mathematics	Georgetown
TORIAN, NELLIE	Special	Paducah
TRUE, MARGARET	Hygiene	Georgetown
ZETZ, FRED	Economics	New York, N. Y.
VAN HOOK, JOSEPH O.	Education	Berea
WARNER, HATTIE C.	Education	Nicholasville
WHALEY, ELLEN	Education	Wilmore
WILKEY, C. R.	Agriculture	Glenwood, Ark.

Name	Major	Address
WILSON, ELLEN WOOD	Psychology	Lexington
WISE, MRS. HARRY	English	Lexington
YATES, LAWRENCE	English	Lexington
YOUNG, GEORGE PHILLIPS	Commerce	Lexington
YOUNG, LUCY A.	English	Lexington
ZIMMERMAN, ALEC JULIUS	Chemistry	Lexington