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GRADUATE SCHOOL

ANNOUNCEMENT 1931-32



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JANUARY 10, 1931

GRADUATE SCHOOL CALENDAR FOR 1931-32

Summer Session

1931	
June 8.....	Monday, registration.
June 9.....	Tuesday, 8 a. m., class work begins.
July 4.....	Saturday, Independence Day, holiday.
July 13.....	Monday, final date for submitting applications for advanced degrees.
July 18.....	Saturday, final date for submitting dissertations for advanced degrees.
July 26.....	Sunday, 11 a. m., baccalaureate address.
July 30.....	Thursday, 8 p. m., commencement exercises.
July 31.....	Friday, 4 p. m., summer session closes.

1931

First Semester

September 15 and 16.....	Tuesday and Wednesday, registration.
September 17.....	Thursday, 8 a. m., class work begins.
September 17.....	Thursday, 10 a. m., opening convocation.
October 16.....	Friday, final date for submitting applications for advanced degrees.
November 11.....	Wednesday, 9:45 to 11 a. m., Armistice Day celebration.
November 25.....	Wednesday, 12 noon, Thanksgiving holidays begin.
November 30.....	Monday, 8 a. m., Thanksgiving holidays close.
December 22.....	Tuesday, 12 noon, Christmas holidays begin.

1932

January 4.....	Monday, 8 a. m., Christmas holidays close.
January 23.....	Saturday, to
January 30.....	Saturday
January 30.....	Saturday, 4 p. m., first semester closes.

Second Semester

February 1.....	Monday, registration.
February 2.....	Tuesday, 8 a. m., class work begins.
March 1.....	Monday, final date for submitting applications for fellowships and scholarships for 1931-32.
March 24.....	Thursday, 12 noon, Easter holidays begin.
March 28.....	Monday, 8 a. m., Easter holidays close.
May 14.....	Saturday, final date for submitting dissertations for advanced degrees.
May 28.....	Saturday, to
June 4.....	Saturday
June 5.....	Sunday, 11 a. m., baccalaureate address.
June 8.....	Wednesday, 10 a. m., commencement exercises.

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GRADUATE SCHOOL ANNOUNCEMENT

ADMISSION: Graduates of the colleges and universities comprising the Missouri College Union and of other reputable colleges and universities are admitted to the Graduate School. Graduates of Missouri State Teachers Colleges, whose first regular enrollment for college work in a teachers college was subsequent to September 1, 1916, and who have completed the 120-hour curriculum, will be admitted to the Graduate School. The list of universities and colleges approved by the Association of American Universities (see Twenty-sixth Annual Conference, 1924, pp. 35-39, and subsequent issues) will be used as a guide in the case of graduates of institutions formerly not admitted.

Admission to this school, however, shall not be understood as implying admission to candidacy for advanced degrees, which is subject to the regulations indicated below.

Students are admitted to the Graduate School by the Registrar of the University, to whom applications for admission and official transcripts of records, including statement of degree or degrees, should be sent before the opening of the session.

LIBRARY, HOSPITAL, AND INCIDENTAL FEE: All students in the University in regular and summer sessions, except those specially exempt by rules of the Curators (see below, page 6), are required to pay a library, hospital, and incidental fee as follows:

- | | |
|--|---------|
| (1) For one semester of 16 weeks..... | \$30.00 |
| (2) For the summer session of 8 weeks..... | \$25.00 |

Students who are permitted to carry work leading to eight credit hours or less in a semester will be admitted on the payment of an incidental fee of \$15.00 a semester. Students in the summer session who are permitted to carry work leading to four credit hours or less will be admitted on the payment of an incidental fee of \$12.50. For the purpose of this rule, courses taken as a hearer will be counted in making up the total number of hours.

FEE FOR LATE REGISTRATION: Every student who files his study card after the close of the last day of registration must pay a fee of \$5 for late registration in addition to fees already provided for.

FEE FOR DIPLOMA, CERTIFICATE, AND HOOD: A diploma fee of \$5 must be paid for each degree or life certificate taken in the University, and a fee of \$2 each for other certificates. Those receiving A. M. and Ph. D. degrees are furnished hoods. The fee for each hood is about \$15.

CHANGES IN FEES: The University reserves the right to make at any time changes in any or all fees without advance notice.

LIVING EXPENSES: The estimated cost of room rent for students living in Read Hall, the dormitory for women, varies, according to the room, from \$40 to \$50 a semester. Room rent in private houses varies. The average is about \$50 a semester. The average cost of board is about \$120 a semester. The expense of the average male student per semester is about \$300; for a woman this item will usually be somewhat higher. No provision is made in this estimate for clothing and railway fares.

UNIVERSITY FELLOWSHIPS AND SCHOLARSHIPS: The University offers annually a limited number of University Fellowships yielding each a stipend of \$600 a year. These fellowships will be awarded, according as the applicants, irrespective of department, have successfully completed at least one year of graduate study and have demonstrated their ability to render service in the form of research. The University offers also a limited number of Scholarships bearing stipends of \$300 annually, open to graduate students of high promise in scholarship, irrespective of

the lines of work they may desire to pursue. It is expected that scholars will be well qualified to do graduate work in the subjects which they elect and that they will devote themselves mainly to work in these subjects. University fellows and scholars are allowed to engage in outside work only with the consent of the Dean of the Graduate Faculty and the professor of the major subject that they elect. The Executive Board, upon the recommendation of the dean and professor, may deprive any student of his fellowship or scholarship, whenever it may appear that he is not devoting himself as he should to his work as fellow or scholar. Applications must be filed not later than March 1, in order to receive consideration in the award for the following academic year. Applications received after this date and not later than June 1 will be considered in filling any vacancies that may occur in the fellowships or scholarships. Application blanks may be obtained from the Registrar of the University and when filled out should be sent to the Dean of the Graduate Faculty, Columbia, Missouri.

GREGORY FELLOWSHIPS AND SCHOLARSHIPS: By the terms of the will of the late Charles R. Gregory of St. Louis, Missouri, the residue of his estate, amounting to approximately \$225,000, after providing for numerous bequests to charitable institutions, was left to the University of Missouri at Columbia to establish "The William Alexander Gregory Educational Fund." This must be invested by the Board of Curators "in a safe and prudent manner, the income from which shall be used in assisting white students of either sex in obtaining an education in any of the courses in said institution."

The Board of Curators has seen fit to provide that not more than \$3,000 annually from this income may be used for the establishment and maintenance of fellowships and scholarships in the Graduate School to be known as the "Gregory Fellowships and Scholarships." These are awarded on the same conditions as the University Fellowships and Scholarships.

PEABODY SCHOLARSHIP IN EDUCATION: In June, 1912, the trustees of the Peabody Education Fund gave the University the sum of \$6,000 on condition that it be held and used as an endowment of a Peabody Graduate Scholarship in education. This scholarship is awarded on the same conditions as apply to University Scholarships.

CURATORS' SCHOLARSHIPS FOR HONOR GRADUATES OF MISSOURI COLLEGES: The Board of Curators, in an attempt to encourage high scholarship, offers annually to the honor graduate, or the student attaining the highest scholastic rank in the graduating class, of each of the following fully accredited Missouri colleges and schools a scholarship amounting to exemption for the first two semesters from the Library, Hospital, and Incidental fee:

Missouri College Union. Scholarships are available to those taking the degree of A. B. or B. S. in the following colleges: Central College, Culver-Stockton College, Drury College, Lindenwood College, Missouri Valley College, Park College, St. Louis University, Tarkio College, Washington University, Westminster College, William Jewell College.

Teachers Colleges. Scholarships are available to those taking the degree of A. B. or B. S. in the following colleges: Central State Teachers College, Warrensburg; Northeast State Teachers College, Kirksville; Northwest State Teachers College, Maryville; Southeast State Teachers College, Cape Girardeau; Southwest State Teachers College, Springfield; Harris Teachers College, St. Louis.

To obtain one of these scholarships, the student must enroll in the University for the session immediately following graduation from the school in which the scholarship was earned. In the event that the first-rank graduate fails to accept the scholarship, it may become available for that graduate who stands second; or,

eventually for the one who stands third, but no lower. Certification of the student's attainment is to be made by the proper official of the institution to the Secretary of the Board of Curators on forms furnished by the latter.

AGRICULTURAL RESEARCH FELLOWSHIPS AND SCHOLARSHIPS: The University offers annually a limited number of research fellowships in the Agricultural Experiment Station, each of the value of \$600, and scholarships, each of the value of \$300. It is the purpose of these fellowships and scholarships to foster and encourage original investigation and to give opportunity to students who desire to become efficient investigators in the field of agricultural science. They are awarded on the same conditions as the University Fellowships and Scholarships. All candidates for these fellowships and scholarships must fulfill the requirements for admission to the Graduate School of the University. (See page 5.)

These fellowships and scholarships are available in the departments of agricultural chemistry, agricultural economics, animal husbandry, dairy husbandry, entomology, farm crops, horticulture, botany, rural sociology, soils, and veterinary science. They will be awarded to the candidates who are best prepared and are of the highest promise in scholarship. Application blanks for these fellowships may be obtained from the Director of the Agricultural Experiment Station, Columbia, Missouri. Applications must be filed not later than March 1, in order to receive consideration in the award for the next academic year. Applications received after this date will be considered in filling any vacancies that may occur in these fellowships or scholarships.

VOLKER SCHOLARSHIP IN SOCIAL SERVICE: William Volker, of Kansas City, has established in the department of sociology, in order to encourage training in social welfare work, a graduate scholarship of the annual value of \$300. The scholarship will be awarded on the same conditions as apply to the University Scholarships.

JOHN W. JEWELL SCHOLARSHIP (GRADUATE): A scholarship in journalism amounting to \$50 a year is awarded each year to the student who, having completed his undergraduate work in journalism, is deemed worthiest—scholarship, character, need of financial assistance, and general fitness for newspaper work being taken into consideration. Funds for this and for four undergraduate John W. Jewell Scholarships were given by the widow and the father of the late John W. Jewell, a former student in the School of Journalism.

TEACHING FELLOWSHIPS: Besides the usual number of University and Gregory Fellowships awarded each year, the University offers a limited number of Teaching Fellowships in the several departments, which entitle the holder to a stipend up to six hundred dollars for the two semesters, according to the number of hours taught. These Teaching Fellows will be eligible for the Summer Session Scholarships mentioned below and will have the opportunity to earn a complete year of graduate credit, in case they register for three-fourths of a full program during the two semesters and devote their entire time during the Summer Session to study.

Applications for these fellowships and scholarships should be filed with the Dean of the Graduate School.

SUMMER SESSION SCHOLARSHIPS FOR MEMBERS OF FACULTIES OF MISSOURI COLLEGES: In order to make available to teachers in Missouri Colleges the resources of the University for graduate instruction, the Board of Curators has created five summer session scholarships for each college faculty in Missouri. These scholarships bear exemption from the library, hospital, and incidental fees.

PRIZES: The following prizes offered by the English Department are open to graduate students:

The Mahan Poetry Prizes of \$100, \$25, and \$10; contest closing November 24.

The Mahan University Essay Prizes of \$50 and \$15; contest closing January 5.

The Dramatic Prize of \$50 for One-Act Plays, awarded by the Dramatic Arts Club and the Missouri Workshop; contest closing March 24.

The Mahan Story Prizes of \$100, \$25, and \$10; contest closing May 4.

The McAnally Medal for English Semester Essays.

For detailed regulations and conditions of these literary contests, see the General Catalog of the University of Missouri.

LOAN FUNDS: Under certain conditions, graduate students may avail themselves of financial aid from the various funds that have been established from time to time for this purpose by benefactors and friends of the University. Applications, together with full information and recommendations, should be addressed to the Secretary of the University.

LITERARY AND SCIENTIFIC SOCIETIES: A large number of literary and scientific societies are maintained in the University, with practically each department and each special field of interest represented. Some of these are conducted by members of the faculty and are open to advanced students. Others are conducted by students, in some cases with the participation of members of the faculty.

HONORARY SOCIETIES: There are a number of honorary societies in the University, organized for the purpose of raising scholastic and cultural standards in their respective lines. In addition to the general literary society, Phi Beta Kappa, the scientific society, Sigma Xi, the social science society, Alpha Pi Zeta, the national Mathematical society, Phi Mu Epsilon, the national musical fraternity, Phi Mu Alpha, and general honor societies, there are similar organizations in the Schools of Law, Medicine, Journalism, Education, Business and Public Administration, the Graduate School, the Colleges of Arts and Science, Agriculture, and Engineering, and in several of the departments.

PUBLICATIONS: The "University of Missouri Studies," several series in "The University of Missouri Bulletin," and the "Publications of the Agricultural Experiment Station" are maintained as a means of publishing the results of original research in the University by instructors and graduate students. (See pp. 76.)

UNIVERSITY LIBRARIES, LABORATORIES, AND MUSEUMS:

LIBRARIES: The University libraries comprise the general library and many departmental libraries. They contain about 270,000 bound volumes and many pamphlets. The University of Missouri has recently acquired the library of Jacques Flach, the famous Alsatian professor of social sciences, consisting of upwards of 6,000 volumes on subjects such as economics, history, sociology, and political science; and that of Abbe Paul Lejay, of Paris, consisting of about 6,000 volumes of classical and general philological subjects. Students have access also to the Library of the State Historical Society of some 94,000 titles and 90,000 duplicates. The distinguished scholar and author, Dr. William Benjamin Smith, Professor in the University of Missouri from 1885 to 1893 (Tulane University, 1893-1906; emeritus, 1906—), has generously presented to the University his private library, consisting of over 3,000 carefully selected volumes, many of them rare and semi-rare books of great value, and containing especially rich collections of works on mathematics, physics, philosophy, religion, and Old and New Testament criticism.

LABORATORIES: Facilities for research in the sciences are provided in the following laboratories: agricultural engineering, animal husbandry, anatomy, astronomy, bacteriology, botany, chemistry, agricultural chemistry, dairy husbandry, engineering (civil, electrical, chemical, sanitary, and mechanical), entomology, experimental psychology, educational psychology, farm crops, geography, geology and mineralogy,

home economics, horticulture, pathology, pharmacology, physics, physiology, physiological chemistry, soils, veterinary science, and zoology.

MUSEUMS: There are also museums of art, classical archaeology, ethnology, geology, and other collections.

REGISTRATION

Directions for registration will be placed in each student's hands by the Registrar. Two days (see calendar, p. 4) are set apart for registration. On the first of these the student should consult his major adviser, or the representative of that department in which he wishes to major, and have his course of study outlined and ready to present to the dean on that or the following day.

PART-TIME REGISTRATION BY TEACHERS ACTIVELY ENGAGED IN SERVICE AND OTHERS WHO MAY BE WITHIN REACH OF COLUMBIA BY MOTOR AND RAIL

Rapid progress in road-building makes it possible for teachers, ministers, professional men, and others who are within easy reach of Columbia by motor or rail to register for graduate seminaries, individual conferences, and courses which are given only once or twice a week and which, if due request is made, may be scheduled at a time convenient to the members of the class.

REGULATIONS GOVERNING THE DEGREE OF MASTER OF ARTS

1. GENERAL STATEMENT

The degree of Master of Arts is offered to students who have spent in residence at least two semesters or four summer sessions (with the exception noted below) exclusively devoted to advanced courses of study and who have submitted an acceptable dissertation, when required by the department of the candidate's major subject, and passed a final examination.

2. ACCEPTANCE OF CANDIDATE

After admission to the Graduate School, a student wishing to become a candidate for this degree must fill out, in consultation with his major and minor advisers, upon a blank form provided for the purpose, a full statement of all the work he proposes to offer for the degree, and must present it to the Dean of the Graduate Faculty not later than one month after his or her registration, as indicated in the Graduate School Calendar (p. 4).

In making such application, the student must indicate the subject of the dissertation, when one is required, and the course of study selected by him with the advice of his major adviser whose signature he must secure to the blank form indicated above, before it is presented to the dean for approval. He may, however, defer submitting the subject of the dissertation for not more than two weeks after filing the application.

A student who fails to file application for his degree in due time may not be recommended for the degree at the appropriate commencement.

3. REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

Two semesters of sixteen weeks each, or four summer sessions of eight weeks each, devoted to advanced courses of study, are required for the degree of Master of Arts.

a. *Course of Study.*

The completion of a total of thirty-two hours of credit, of which not less than sixteen must be in courses numbered 200 and above, is required. The remaining sixteen hours may, with the consent of the adviser, be selected from the courses numbered 100-199, as listed in this Bulletin. In case of courses not so listed, the student should consult the Dean of the Graduate Faculty. Courses numbered below 100 do not receive credit toward any advanced degree. Courses transferred through advanced standing or taken by correspondence or otherwise in absentia may be applied toward a graduate degree only with the approval of the candidate's adviser.

b. *Dissertation.*

The dissertation, when required, must demonstrate the student's capacity for research and independent thought and must be submitted to the Graduate Faculty on or before the final date set in the Graduate School Calendar (p. 4). The student should consult the chairman of the department in which he wishes to major in regard to the requirements for the dissertation and the Dean of the Graduate Faculty for information regarding the form in which the dissertation must be submitted.

Credit for the dissertation is counted in terms of hours in making up the total of 32 hours required for the degree; the number of hours credit that may be allowed for the dissertation varies with different departments.

c. *Final Examination.*

Each candidate for the degree of Master of Arts is required to pass a final examination evincing a mastery of the fundamental principles of his major subject.

4. SUMMER SESSIONS

Four summer sessions, in which the student may receive credits of eight hours each, are required for the completion of the requirements exclusively in the summer. Eight hours, or the equivalent of one of the four summer sessions, may be earned through the University of Missouri Extension Division, either by correspondence or by extension under certain conditions, or by work *in residence* in some other University having a recognized graduate school. Through "Extension Center Courses" conducted by members of the graduate faculty, four additional hours of credit may be secured. The student must see to it that, in every case, such courses receive credit under these regulations. In the case of correspondence work, only four out of eight hours of credit may be acquired before the establishment of residence, provided all other regulations pertaining to admission and matriculation are satisfied. For further information in regard to these courses, the student should correspond with the Director of University Extension. The Graduate School will not undertake to transfer credits earned through correspondence or extension, nor will it accept such credits from any other institution.

5. ADVANCED STANDING FOR THE MASTER'S DEGREE

a. *From other institutions.*

Not more than eight hours' credit, or one-fourth of the year required for the Master's degree, may be made away from the University by graduate students and will be accepted only in case the other institution has a recognized graduate school.

b. *From the University of Missouri.*

Seniors, who at the beginning of any semester have a graduation requirement for the bachelor's degree of fifteen hours or less, may be permitted, with the approval of the appropriate deans, to register simultaneously in the Graduate School for courses sufficient to make up a full program. Students who graduated with excess undergraduate credits before 1923 will *not* receive credit for the same hereafter.

Students who graduated between 1923 and 1925 will receive credits as heretofore; but each year, in order, one of the years between 1923 and 1925 will be eliminated from this category until in February, 1932, this privilege will be abolished altogether.

Similar credits may be allowed a student for excess undergraduate work from another institution having a recognized graduate school, to the extent of one-half of one semester (namely, eight hours), if such advanced standing would be granted by the graduate school of that institution. If the institution in question has not a graduate school that may be recognized as such, no advanced standing will be allowed.

The student will be held responsible in the master's examination for all credits in advanced standing presented in candidacy for the degree.

The attention of the student is called to the fact that graduate work cannot be subjected to rigid regulation, and the Graduate Faculty reserves the right to deal with each case on its individual merits.

6. RECOMMENDATION FOR THE DEGREE

With the approval of the professors concerned, such candidates as have fully met all requirements may at the close of the winter term or any summer session be recommended by the Graduate Faculty for the degree of Master of Arts.

REGULATIONS GOVERNING THE DEGREE OF DOCTOR OF PHILOSOPHY

1. GENERAL STATEMENT

The degree of Doctor of Philosophy is offered to students who have pursued advanced courses of study without serious interruption for a period of at least six semesters, who have submitted an acceptable dissertation, passed all prescribed examinations and satisfactorily met all other requirements described below.

It should be emphasized that the requirements for this degree are not computed in terms of time and courses but that the degree is conferred only upon such students as have reached, after long study, a high attainment in some special branch of learning and have given the clearest evidence of their ability to carry on independent, original research by reason of having made an actual contribution to knowledge of a character approved by competent judges.

2. ACCEPTANCE OF CANDIDATES

In order to be accepted by the Graduate Faculty as a candidate for the degree of Doctor of Philosophy, the student must give evidence that he has completed an undergraduate course of study such as is offered by colleges of good standing and that he has received a baccalaureate degree equivalent to the baccalaureate degree of the University of Missouri.

He must also declare his candidacy by filling out, not later than the beginning of his second year of graduate work,* a blank form provided for the purpose, secure thereto the signature of the adviser under whose direction he desires to do his research work, and present it to the Dean of the Graduate School for his approval. When such approval is given the dean shall appoint, in consultation with the adviser, an advisory committee to confer as to the future work of the candidate.

*Students who have done graduate work elsewhere may, with the consent of the adviser and the dean, be admitted to candidacy at a later stage in their study.

3. REQUIREMENTS FOR THE DEGREE

(a) *Residence*.—The candidate must pursue advanced courses of study without serious interruption for a period of six semesters. If any of the years of advanced work have been passed away from this University the faculty reserves the right to decide in each case whether these years may be properly regarded as spent in university studies under suitable guidance and favorable conditions. Private study or study pursued at a distance from libraries and laboratories will not be considered as equivalent to university work. In any case, the student must spend the two semesters immediately preceding his final examination in residence at the University of Missouri, unless specifically authorized by the Graduate Faculty to do otherwise.

(b) *Subjects of Study*.—The subjects of study may be chosen from one or more departments, as may be determined by the advisory committee; but shall constitute a definite plan of training for research or scholarly investigation in some particular field.

(c) *Dissertation*.—The dissertation, embodying the results of original investigation, must be written upon a subject approved by the adviser and must be submitted in typewritten form four weeks before the commencement at which the degree is sought. It then becomes the property of the University. A brief biographical sketch of the writer must be appended to the dissertation. The student should consult the Dean of the Graduate Faculty for information regarding the form in which the dissertation must be presented.

Upon receiving the dissertation a committee is appointed whose duty it is to report upon it in writing to the Graduate Faculty.

The candidate is required to print the dissertation with such revision as the faculty may allow. Before his degree is conferred, the candidate is required to deposit 150 printed copies of his dissertation in the University Library. Or, in case the dissertation has not been printed before the conferring of the degree, the candidate may (1) deposit with the Secretary of the University a statement from a responsible publishing agency certifying to the fact that a contract has been entered into for the printing of the dissertation, and that the required number of copies will be furnished within a reasonable time; or (2) the candidate may deposit with the Secretary of the University a financial guarantee sufficient to print the required number of copies for the University. With the special permission of the Dean of the Graduate Faculty, the publication of the substantial contribution to knowledge may be accepted in lieu of the publication of the entire dissertation.

(d) *Examinations*.—Upon the request of the major adviser a committee, consisting of the members of the advisory committee and such others as the dean may select, shall be appointed to take charge of all examinations and to report upon the same to the dean in writing.

At least one year before the final examination, the candidate is required to pass a preliminary examination conducted by the examining committee.*

*This examination may, with the consent of the dean, be met at the beginning of the last year of residence.

The final examination may be either written or oral or both; and, if oral, may be conducted in the presence of the faculty.

(e) *Languages*.—Before being admitted to the preliminary examination the candidate must give satisfactory evidence of ability to translate French and German readily at sight. In especial cases with the approval of the Administrative Com-

mittee of the Graduate School students may be allowed to substitute other languages. In the case of a candidate for the doctorate majoring in French or German some other language, modern or ancient, shall be substituted for the language of the major.

(f) *Conferring of Degree.*—Upon the satisfactory completion of all requirements, the candidate may be recommended by the Graduate Faculty for the degree of Doctor of Philosophy.

COURSES OF INSTRUCTION

Courses preceded by a number with letter *f* attached, thus: 104*f*, 106*f*, are given in the fall semester. Those preceded by a number with the letter *w* attached, thus: 104*w*, 106*w*, are given in the winter semester. Those preceded by a number with the letter *s* attached, thus: 175*s*, are given in the summer session. The number of hours' credit given for a course for each term is indicated by the arabic numerals in parentheses following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

The amount of work that can be offered during the summer depends upon the demand and is subject to change. The special *Bulletin of the Summer Session* gives later information. But students desiring upperclass and graduate courses would do well to inquire in advance of their coming regarding the work available in the department or departments in which they wish to work during the summer session.

ACCOUNTING AND STATISTICS

Prerequisites for graduate study: If the student wishes to specialize in accounting he must have the equivalent of the undergraduate degree in the curriculum of Accounting and Statistics in the School of Business and Public Administration. If he wishes to specialize in statistics, he must have the equivalent of an undergraduate major in closely related courses in this and associated departments including courses 107 and 127.

107*f* and *w*. ELEMENTARY STATISTICS. Prerequisite, one course in college mathematics. This course is intended to familiarize the student with the elementary principles of statistics as applied in the scientific study and interpretation of economic and social phenomena. Emphasis is laid primarily on a critical appreciation of the general processes involved rather than on a detailed study of technique. (3) Mr. HARTKEMEIER

117*f* and *w*. INTERMEDIATE ACCOUNTING. Prerequisite, course 17. An intensive study of the balance sheet and income statement, including consolidated statements of both types. Also a study of special problems including depreciation, branch house accounting, statements of affairs, fiduciary accounts and others. (4) Mr. SCOTT

120*s*. PROBLEMS IN ACCOUNTING PRACTICE. Prerequisite, course 117. Problems and discussions covering the installation and use of accounting systems and the preparation of reports for the business management. Practical problems of the public accountant. (3) Mr. BAUER

121*f*. INDUSTRIAL ACCOUNTING. Prerequisite, course 117. A study of industrial accounting technique and its place in the development of accounts. (2) Mr. SCOTT

127*w*. ADVANCED STATISTICS. Prerequisite, course 107. A study of simple, linear, non linear, partial, and multiple correlation. Curve fitting, sampling, and probability are also considered. The student who intends to specialize in statistics is strongly urged to take analytical geometry and calculus. (3) Mr. HARTKEMEIER

128*f*. MANAGERIAL ACCOUNTS AND STATISTICS. Prerequisites, courses 107 and 117. A study of the use of accounts and statistics for the purpose of the direction of business policy. (3) Mr. SCOTT

133*w*. MUNICIPAL ACCOUNTING AND BUDGETARY CONTROL. Prerequisite, course 117. A study of accounting and budgetary control of public funds with especial reference to municipal accounts. (2) Mr. SCOTT

134w. PUBLIC ACCOUNTING PRACTICE. Prerequisite, course 117. A study of auditing principles and problems. A summary review of accounting principles in their relation to the work of the practicing accountant. (3) MR. BAUER

220w. SPECULATIVE MARKETS AND BUSINESS CYCLES. The organization, methods, and function of produce exchanges and securities markets. The recurring periods of activity and inactivity known as prosperity, crisis, and depression, and their relation to speculative and investment transactions. (3-5) MR. HARTKEMEIER

233f and 233w. SEMINARIES. (Credit to be arranged.)

235w. ADVANCED ACCOUNTING THEORY. A study of the functions of accounts; their development; their place in the current business regime; and their relation to the process of economic development. (3-5) MR. SCOTT

AGRICULTURAL CHEMISTRY

MINOR IN AGRICULTURAL CHEMISTRY

The following courses may be counted toward a minor in Agricultural Chemistry; they may not be counted for a major:

101w. AGRICULTURAL ANALYSIS. Prerequisite, chemistry 15 and 25. Quantitative analysis of feeding stuffs, fertilizers, soils, and dairy products. (3) MR. RITCHIE

110s, 111f, and 112w. ADVANCED AGRICULTURAL ANALYSIS. A continuation of the first course in agricultural analysis. Three to five periods per week; in addition, one conference period. (3-5) MR. RITCHIE

MAJOR IN AGRICULTURAL CHEMISTRY

The following courses may be counted toward a major or minor in Agricultural Chemistry:

200s, 201f, and 202w. SEMINARY: (1) MR. HOGAN

204f. PHYSIOLOGICAL CHEMISTRY OF THE DOMESTIC ANIMAL. Prerequisite, 3 hours of organic chemistry. Offered in alternate years; given in the year 1931-32. (4) MR. HOGAN

205f. PLANT CHEMISTRY. Prerequisite, 3 hours of organic chemistry. Three laboratory periods, two lectures. Offered in alternate years; given in the year 1931-32. (4-6) MR. VINSON

206w. DAIRY CHEMISTRY. Prerequisite, 3 hours of organic chemistry. Offered in alternate years; not given in the year 1931-32. (4) MR. BRODY

207f. COLLOID CHEMISTRY. Prerequisite, 3 hours of physical chemistry. Three lectures, two laboratory periods. Offered in alternate years; not given in the year 1931-32. (4-6) MR. JENNY

208s, 209f, and 210w. SPECIAL INVESTIGATIONS. (2-6) MR. HOGAN; MR. BRODY; MR. RITCHIE; MR. JENNY; MR. VINSON

211s, 212f, and 213w. RESEARCH. (4-8) MR. HOGAN; MR. BRODY; MR. JENNY; MR. VINSON

AGRICULTURAL ECONOMICS

Prerequisite for graduate study in Agricultural Economics: The equivalent of a B. S. in Agr., with at least 14 hours in Agricultural Economics or five hours in Gen-

eral Economics and nine hours in Agricultural Economics; for graduate study in Farm Management: The degree of B. S. in Agr., or the equivalent of 30 hours in the production courses in agriculture.

101f. PRINCIPLES OF MARKETING AND COOPERATION. A survey of the marketing system as a whole: the various types of middlemen and their functions, the general weaknesses of the system, and suggested remedies. The possibilities and limitations of cooperative marketing, and factors determining success or failure. (3) MR. THOMSEN

102w. COMMODITY MARKETING PROBLEMS. Prerequisite, Course 101f. Application of marketing principles to specific problems and practices in marketing individual commodities. The class will be divided into sections by commodities, thus giving each student an opportunity to specialize in the marketing of the particular commodities in which he is most interested: (a) livestock; (b) dairy and poultry products; (c) grain and cotton; (d) horticultural products; (e) general farm marketing. (2) MR. THOMSEN

105f. FARM ACCOUNTS. Methods and practice in keeping farm accounts; especial attention to farm financial records, feed records, labor records, production records, and methods of determining live stock and crop production costs. (3) MR. FRAME

107w. FARM FINANCE. A study of the financing of farm credit needs based upon a brief survey of the principles of the financial structure and money and banking. Particular attention will be given to those institutions that are sources of agricultural credit, i. e. the Federal Reserve system, Federal Land Bank, Intermediate Credit Bank, etc. (3) MR. HAMMAR

110w. GENERAL FARM MANAGEMENT. A study of the factors determining the success of a farming program; the principles to be considered in determining the type of farming to be followed and those which guide us in choosing a farm and organizing a farm business for maximum efficiency. (3) MR. JOHNSON

120f. AGRICULTURAL GEOGRAPHY. A study of the geography of the principal agricultural producing regions of the world, with especial emphasis on the development of those regions competing directly with American farmers or furnishing essential raw products of the land. (2) MR. FRAME

121w. ECONOMIC HISTORY OF AGRICULTURE. A general historical survey of the economic development of agriculture with especial emphasis on American agriculture. (2) MR. HAMMAR

125f. AGRICULTURAL STATISTICS. This course includes a study of the collection, analysis, and presentation of agricultural statistics and is designed to furnish a knowledge of statistical methods sufficient for all ordinary requirements in agricultural work. (3) MR. FRAME

127f. AGRICULTURAL PRICES. A study of the various factors that affect the prices of farm products, and the use of current market information in planning what to produce and where and when to sell. (3) MR. THOMSEN

150w. LAND ECONOMICS. A critical examination of the system of land utilization in the United States. The course is developed about the topics of conservation, land classification, land utilization, land valuation, tenancy and the agricultural ladder, land taxation, and the land policies of the United States. (2) MR. HAMMAR

151f. PROBLEMS IN LAND VALUATION. An intensive study of the structure, significance, and movements of land values in Missouri and the United States. (6) Offered alternately with 152f; not given in 1931-32. (1) MR. HAMMAR

152f. PROBLEMS IN AGRICULTURAL TAXATION. An intensive topical study of the farmer's tax problems with especial reference to Missouri conditions. Offered alternately with 151f; given in 1931-32. (2) MR. HAMMAR

200s, f, and w. SEMINARY. Special lectures and reports on current economic problems in agriculture. (1)

201w. ADVANCED AGRICULTURAL PRICES. An advanced technical study of marketing and price problems, with especial reference to the Federal Farm Board and cooperative organization. (2) MR. THOMSEN

205w. CURRENT ECONOMIC PROBLEMS OF AGRICULTURE. Prerequisite, 14 hours of agricultural economics or their equivalent. Analysis of the more important current economic problems of the farmer, together with proposed remedies. (2) MR. JOHNSON

210w. ADVANCED FARM MANAGEMENT. A study of the application of farm management principles on individual farms. Detailed analyses will be made on from 25 to 40 farms. Wherever possible, personal visits to the farm will be made. (3) MR. JOHNSON

225f. ADVANCED AGRICULTURAL STATISTICS. This course will include a brief review of simple correlations and will take up the theory underlying multiple and partial correlation and their practical application, and the theory of sampling and forecasting. The student is urged to use his own thesis problem as data for laboratory work. (2) MR. FRAME

240s, f, and w. RESEARCH IN AGRICULTURAL ECONOMICS. (Credit to be arranged.) Teacher elected by student.

AGRICULTURAL ENGINEERING

103w. FARM BUILDINGS. The place of buildings in the business of farming. The requirements for housing different animals and crops. Requirements of the modern farm home. A study of present plans in relation to the requirements. Structural materials, their adaptability and use. Practice in drawing and interpreting plans, and in the use of wood, concrete, brick and tile in construction and repair. Two lectures and one laboratory period per week. (3) MR. WOOLEY

104w. FARM BUILDING DESIGN. Prerequisite, course 103 or registration therein. A laboratory course in design and testing. (2) MR. WOOLEY

112w. FARM POWER AND MACHINERY II. A continuation of course 11. Special work on tractors, tractor-operated machinery, and harvesting machinery. Electric power and machinery for the farm. Selection, use and management of power equipment. Two lectures and one laboratory period per week. (3) MR. JONES; MR. SMITH

121f. DRAINAGE AND EROSION CONTROL. A study of the place of terraces, drains and dams in the modern farming program. Field practice in laying out and constructing terraces, ditches and tile drains; locating and constructing barriers and soil saving dams. Elementary drainage law, district organization, etc. One lecture and two laboratory periods per week. (3) MR. WOOLEY

122f. IRRIGATION AND DRAINAGE. Prerequisite, agricultural engineering 121 or its equivalent. Water rights. Irrigation by pumping. Methods of applying water to the land. Irrigation of different crops. The measurement of water. The drainage of irrigated land. The course covers irrigation and drainage from the farmer's point of view. (2) MR. WOOLEY

150f, w and s. SPECIAL PROBLEMS. Prerequisites, agricultural engineering 10, 11, 103, 112 or 121, depending upon the nature of the work elected. Problems in farm shop work, farm power and machinery, farm buildings, or farm drainage and erosion control. (2-5) MR. WOOLEY; MR. JONES

200f and w. SEMINARY. Study of recent investigations in agricultural engineering and related fields; discussion of current literature, preparation and presentation of papers. (1) MR. WOOLEY; MR. JONES

203f, w and s. RESEARCH IN FARM BUILDINGS. Special studies relating to cost of and returns from buildings and their equipment; studies and tests of materials; design and testing. (2-5) MR. WOOLEY; MR. JONES

212f, w and s. RESEARCH IN POWER AND MACHINERY. Special studies relating to the use of power and machinery in agriculture. Tests to determine operating characteristics and cost of machines. Design and construction of test apparatus, of attachments for machines, or of new machines. (2-5) MR. JONES; MR. WOOLEY

221f, w and s. RESEARCH IN DRAINAGE AND EROSION CONTROL. Special studies relating to mechanical methods for draining or controlling erosion on agricultural land. Testing of present equipment and methods and the design of improvements or of new equipment for building terraces and drains. (2-5) MR. WOOLEY

ANATOMY

Prerequisite for graduate work: The first year of the required medical curriculum or its equivalent.

102f. HUMAN DISSECTION. A study of the gross structure of the human body. Dissection progressing in the following order: extremities, thorax, abdomen. (8) MR. ALLEN; MR. CROUCH; MR. RAUNER; MR. THOMAS

103w. HUMAN DISSECTION. Prerequisite, course 102f. A continuation of course 102f; dissection of the abdomen (cont.), head, and neck. (4) MR. ALLEN; MR. CROUCH; MR. RAUNER; MR. THOMAS

104f. HISTOLOGY. A study of the microscopic structure of the body undertaken from the embryological viewpoint. (5) MR. CHARLTON; MR. JONES

105w. NEUROLOGY. The gross and microscopic structure of the central nervous system and the sense organs. (3) MR. CHARLTON; MR. KENNEDY; MR. JONES

106f. TOPOGRAPHIC AND APPLIED ANATOMY. Prerequisite, courses 102 and 103. A course devoted to the study of cross sections of the human body and to the practical consideration of the anatomical structures concerned in clinical surgery. (3) MR. CHARLTON; MR. KENNEDY

108f. ANATOMICAL TECHNOLOGY. An opportunity for trial of standard methods of gross or microscopic preparation of anatomical material. This may include preparation of bones, preservation of specimens, injection of organs, or the microscopical technique of slide preparation. (3-6) MR. CHARLTON; MR. ALLEN

206f and 207w. ADVANCED ANATOMY. Prerequisite, courses 102, 103, 104, and 105. The intensive study of regions or systems as preparation for specialization in medicine. This may include developmental and microscopic as well as gross anatomy. (Credit to be arranged.) MR. ALLEN; MR. CHARLTON

208f and w. RESEARCH. The facilities of the department are available to students qualified to undertake investigation in anatomy. (4-6) MR. ALLEN; MR. CHARLTON

209f and w. SEMINARY. The presentation and discussion of original investigation and current literature. Open to students in courses numbered above 200. (1)

ANIMAL HUSBANDRY

Students expecting to do major graduate work in Animal Husbandry should have included in their undergraduate work a total of eighteen (18) credit units in the following specified subjects or their equivalents: Types and market classes of live stock; elementary zoology; economics; organic chemistry; animal nutrition; animal breeding; veterinary science.

A dissertation will be required for the master's degree, unless the department in any individual case permits the candidates to substitute other work.

The following courses may be counted toward a minor in Animal Husbandry; they may not be counted for a major.

100s and f. PRINCIPLES OF ANIMAL NUTRITION. Prerequisite, organic chemistry 15. The laws of animal nutrition; adaptation of facts of physiological chemistry to feeding of domestic animals. (3) MR. HOGAN; MR. WEAVER

101w. ANIMAL BREEDING. Prerequisite, general zoology, 1; principles and practices involved in the improvement of domestic animals; physiology of reproduction, growth and development; master breeders, variation, heredity, close breeding, cross breeding, grading, prepotency, pedigree, selection, and allied subjects in their relation to live stock improvement. (3) MR. TROWBRIDGE; MR. MCKENZIE; MR. COMFORT

102f. ADVANCED LIVE STOCK JUDGING. Prerequisite, course 3. This course includes excursions to live stock shows and noted breeding farms. (3) MR. CHITTENDEN

The following courses may be counted toward a major or minor in Animal Husbandry:

103w. LIVE STOCK PRODUCTION. Prerequisite, courses 1 and 100. Systems of beef, pork, sheep, horse, and mule production, including breeding, feeding, and management of commercial and purebred live stock. (5) MR. WEAVER

107f. LIVE STOCK MANAGEMENT. Prerequisite, 103w. Successful methods of operating farms devoted chiefly to live stock production. A study of systems applied to Missouri conditions. (2) MR. TROWBRIDGE; MR. WEAVER

108s, 109f, and 110 w. SPECIAL PROBLEMS. Topics assigned or chosen subject to approval. MR. TROWBRIDGE AND MEMBERS OF DEPARTMENT

120f. ANIMAL BREEDING INVESTIGATIONS. Prerequisite, course 101w and Veterinary Science, 1f. Study of specimens and original investigations; current literature on anatomy and physiology of reproduction. (2) MR. MCKENZIE

125s. LIVE STOCK JUDGING AND MANAGEMENT. Prerequisites, courses 1 and 100, or equivalents. Adapted to high school teachers of vocational and general agriculture. Basic and current live stock types and methods of production. During last half of term only (2) MR. TROWBRIDGE

200f and 201w. SEMINARY. Special investigation of selected lines of animal husbandry. Preparation and presentation of papers for discussion. (1) MR. TROWBRIDGE; MR. MCKENZIE

204w. ANIMAL NUTRITION. Prerequisite, course 100. A study of the more important contributions to the knowledge of animal nutrition; designed for students specializing in some phase of animal industry. Offered in alternate years; not given in the year 1931-32. (2) MR. HOGAN

207w. LIVE STOCK FEEDING INVESTIGATIONS. Prerequisite, course 103w. A study of the more important investigations in feeding cattle, hogs, sheep, horses and mules. (2) MR. TROWBRIDGE; MR. WEAVER

208s, 209f, and 210w. RESEARCH IN ANIMAL HUSBANDRY. Advanced studies of special phases of animal production. MR. TROWBRIDGE; MR. WEAVER; MR. CHITTENDEN

211s, 212f, and 213w. RESEARCH IN ANIMAL BREEDING. Advanced studies of reproduction, inheritance, and development in the domestic animals. MR. MUMFORD

214s, 215f and 216w. RESEARCH IN ANIMAL NUTRITION. Fundamental studies of nutritional problems. MR. HOGAN

219s, 220f, and 221w. RESEARCH IN THE PHYSIOLOGY OF REPRODUCTION. A project will be assigned to the student and conducted by him. MR. MCKENZIE

ARCHAEOLOGY (CLASSICAL)

See under CLASSICAL LANGUAGES AND ARCHAEOLOGY.

ART—THEORY AND PRACTICE OF

Students desirous of entering the Graduate School of the University to pursue their art studies should present the equivalent of the various courses listed below:

In drawing and painting: Painting III (137), Drawing IV (168), History of Architecture (104, 105), and Composition V (139). In Decorative Design: Applied Design II (130), History of Architecture (104, 105), Historic Ornament I (142), and Painting I (77). In Architecture: Drawing III (118), History of Architecture (104, 105), Historic Ornament I (142), Architectural Design III (141), and Construction III (161). In Applied Art: Painting I (77), Bookbinding (109), Pottery II (108), Weaving (104), Drawing II (88), and Artcraft II (60). For details of these courses see University Catalog.

A master's thesis is usually required though it may take the form of an advanced exercise in one of the fields of art.

MINOR IN ART

The following courses may be counted toward a minor in Art; they may not be counted for a major:

- 102f and w. ARTCRAFT IV. Individual work in the crafts. (2) MISS DOBBS
 120f. APPLIED DESIGN I. Specific use of general design principles. (3) MR. GENTRY; MR. HANSEN
 152f and w. HISTORIC ORNAMENT II. Advanced study of details of the various styles. (3) MR. BILL
 159f and w. COMPOSITION VI. Designing of mural decorations. (4) MR. HUDSON
 160f and w. DECORATIVE COMPOSITION I. Projects in decorative design. (5) MR. GENTRY; MR. HANSEN
 162f and w. DOMESTIC ARCHITECTURE. Problem of the residence. (5) MR. BILL
 163f and w. SPECIFICATIONS, PRACTICE, AND ETHICS I. As applied to above. (1) MR. BILL
 171f and w. ARCHITECTURAL DESIGN IV. Advanced projects in planning. (5) MR. BILL
 177f and w. PAINTING IV. Painting of head and figure with accessories. (4) MR. HUDSON; MR. HANSEN
 188f and w. DRAWING V. Advanced life class. (4) MR. HUDSON; MR. HANSEN

MAJOR IN ART

The following courses may be counted toward a major or minor in art:

- 172f and w. CIVIC BUILDINGS. Problems of the public building. (5) MR. BILL
 173f and w. SPECIFICATIONS, PRACTICE, AND ETHICS II. As applied to above. (1) MR. BILL
 179f and w. COMPOSITION VII. Complete evolution of picture in professional manner. (6) MR. HUDSON
 180f and w. DECORATIVE COMPOSITION II. Advanced projects in decorative design. (6) MR. GENTRY; MR. HANSEN
 181f and w. CONSTRUCTION IV. Working drawings for course 172. (2) MR. BILL
 190f and w. TECHNICAL CRAFT. Technique of chosen craft. (5) FINE ARTS STAFF
 192f and w. COLLABORATIVE DESIGN. Designing in collaboration with students of other art. (5) MR. BILL

- 197f and w. PAINTING V. Advanced painting of head and figures with accessories. (4) MR. HUDSON; MR. HANSEN
- 220f and w. GRADUATE COLLABORATION. Advanced designing in collaboration with students of other arts. (4) FINE ARTS STAFF
- 230f and w. SPECIAL PROBLEMS. Original work in student's chosen field. (4) FINE ARTS STAFF
- 240f and w. HISTORIC RESEARCH. (2) FINE ARTS STAFF
- 250f and w. SEMINARY. To be arranged. FINE ARTS STAFF

ASTRONOMY

101f. GENERAL ASTRONOMY. Prerequisite, analytic geometry and elementary physics. An introductory course with emphasis on the application of mathematical methods and mechanical principles to the elementary problems of astronomy. (3) MR. HAYNES

104f. PRACTICAL ASTRONOMY. Prerequisite, trigonometry. Determination of azimuth, time, longitude and latitude, chiefly with the engineers' transit and the sextant. Laboratory course. (3) MR. HAYNES

The following courses may be given if elected by a sufficient number of students:

105w. ADVANCED PRACTICAL ASTRONOMY. Prerequisite, course 104. Precise observations with the instruments of the Observatory. Laboratory course. (2) MR. HAYNES

110w. HISTORY OF ASTRONOMY. Prerequisite, course 1. (3) MR. HAYNES

120w. ASTROPHYSICS. Prerequisite, course 1 and College Physics or course 101. (3) MR. HAYNES

125f. THEORY OF INTERPOLATION AND MECHANICAL QUADRATURES. Prerequisite, Integral Calculus. (3) MR. HAYNES

205f. CELESTIAL MECHANICS. (3) MR. HAYNES

206w. THEORY OF ORBIT DETERMINATION. (3) MR. HAYNES

BIOCHEMISTRY

101f ELEMENTARY PHYSIOLOGICAL CHEMISTRY. A course of about 26 lectures and 26 laboratory periods, for students wishing a general outline of the subject. Prerequisite, 5 hours biological science and 3 hours organic chemistry. Not open for credit in School of Medicine. (3) MR. GULICK

106w. PHYSIOLOGICAL CHEMISTRY. Prerequisite, Organic Chemistry, course 110 or its equivalent. Students taking both 101f and 106w receive credit for 7 hours. (5) MR. GULICK; MR. CALVIN

108w TOXICOLOGY. The chemical identification of toxic substances. (2) MR. GULICK

203f and 204w. ADVANCED PHYSIOLOGICAL CHEMISTRY. A course supplementing and extending course 106w. The prosecution of a short experimental problem is expected. (2-4) MR. GULICK

205f and w. THE BLOOD. An introduction to the clinical and research problems of blood chemistry. Prerequisite, 106w or equivalent. (3) MR. CALVIN

211f and 212f. BIOCHEMISTRY SEMINAR. Reviews and discussions of the research literature, by the teaching staff and graduate students. (1) MR. GULICK

215f and 216w. BIOCHEMICAL PROBLEMS. Introductory research, primarily for graduate students (2-6) MR. GULICK, MR. CALVIN

217f and 218w. **BIOCHEMISTRY RESEARCH.** Experimental research, of strictly graduate character. (2-10) MR. GULICK; MR. CALVIN

BOTANY

The minimum prerequisite for graduate work in the Department of Botany is 24 hours' credit in botany or allied subjects—bacteriology, chemistry, horticulture, field crops, zoology, etc. When the credit in the allied subjects is more than 5 hours, personal conference with the student will be necessary.

100w. **PLANT PHYSIOLOGY.** Lectures and laboratory work on the physiology of the common cultivated plants. (5) MR. ROBBINS

101s. **TAXONOMY AND ECOLOGY.** A study of the classification and environmental relations of the local flora with special reference to the collection, preparation, and use of materials for courses in general botany. (3) MR. RICKETT

102f. **PLANT PATHOLOGY.** A study of special groups of fruit, vegetables, and cereal diseases, with reference to symptoms, life histories of parasites, and methods of control. (3) MR. MANEVAL

104s and f. **HISTOLOGICAL METHODS.** Methods used in the preparation and preservation of class material and in fixing, sectioning, and staining sections for microscopical study. (3) MR. NAYLOR

106s and f. **HEREDITY AND GENETICS.** Theories and facts of heredity, with application to plant breeding, evolution, and eugenics. (3) MR. RICKETT

107w. **MYCOLOGY.** A systematic study of the fungi, with especial reference to those causing plant disease. Not given in 1931-32. (3) MR. MANEVAL

111f, 112w. **SPECIAL PROBLEMS.** On consultation with the teachers concerned, properly prepared students may study special problems in the various fields of botany. (Credit to be arranged.) MR. ROBBINS; MR. MANEVAL; MR. RICKETT

200f and w. **SEMINARY.** Special subjects of botanical work will be discussed, including the results of investigations carried out in the department. A reading knowledge of French and German is essential. (1 or 2) MR. ROBBIN; MR. RICKETT; MR. MANEVAL

201w. **ADVANCED PLANT PATHOLOGY.** A general course in phytopathological technique. The topics considered will be preparation and reaction of culture media, isolation, cultivation, and physiological study of plant pathogenes, inoculation of host plants, and relation of host to pathogene.

202f and w. **ADVANCED PLANT PHYSIOLOGY.** Prerequisite, course 100w or equivalent. Lectures and laboratory work on problems in plant physiology related to plant production. (2-5) MR. ROBBINS

203f, 204w, 205s. **SPECIAL TOPICS.** Study of subjects in botany not included in the courses regularly offered. Designed especially for graduate students whose major interest or whose research work demands additional directed training. (3-5) MR. ROBBINS; MR. MANEVAL; MR. RICKETT

206f, 207w, and 208s. **RESEARCH.** Students who have had adequate preparation will be assigned some special problem for investigation. A reading knowledge of French and German is essential. (Credit and hours to be arranged.) MR. ROBBINS; MR. MANEVAL; MR. RICKETT

215w. **ADVANCED GENETICS.** Prerequisite, course 106f or its equivalent. Lectures and readings from the original literature. Not given in 1931-32. (3) MISS GUTHRIE; MR. STADLER; MR. RICKETT

CHEMICAL ENGINEERING

100f. INTRODUCTION TO CHEMICAL ENGINEERING. Prerequisite, senior standing. Lectures and laboratory work covering certain elementary operations such as methods of handling chemicals and their solutions, grinding, classification, lixiviation, drying and such unit operations as the use of the autoclave, centrifuge and hydrogenation. (5) MR. LORAH

151w. PRINCIPLES OF CHEMICAL ENGINEERING. Prerequisite, course 100 or its equivalent. Lectures and laboratory work on the fundamental principles of filtration, evaporation, crystallization, distillation, absorption, and extraction. (5) MR. LORAH

252f. ADVANCED CHEMICAL ENGINEERING. Prerequisite, course 151 or graduate standing in Chemical Engineering. An application of the fundamental principles to some of the more difficult operations in chemical engineering. (3) MR. LORAH

261w. CO-ORDINATION OF UNIT OPERATIONS. Prerequisite, course 100 or its equivalent. The co-ordination of unit operations in a plant, including specifications and estimates. (3) MR. LORAH

270f and w. THESIS. Investigation of some problem of practical value. Weekly reports. Final results must be presented at the end of the year in a carefully prepared dissertation. (Credit to be arranged.) MR. LORAH

271f and w. RESEARCH. Investigation of the principles involved in the design and use of apparatus or investigational work in some phase of applied chemistry. (Credit to be arranged.) MR. LORAH

CHEMISTRY

Graduate work in Chemistry is based upon an undergraduate major including courses 110, 112, 121, and 130 or 131. Graduate students majoring in chemistry who enroll in any of these courses can not count toward the degree of Master of Arts credit thus earned.

The department strongly urges students planning to major in chemistry to acquire a reading knowledge of French and German.

110s, f, and w. ORGANIC CHEMISTRY. Prerequisite, ten hours' work in chemistry; medical students will be admitted to this course with eight hours' chemistry. (5) MR. CALVERT; MISS NIGHTINGALE

112s, f, and w. ORGANIC CHEMISTRY. Continuation of the subject matter of course 110. Required of students specializing in chemistry. (3) MR. CALVERT; MISS NIGHTINGALE

113s, f, and w. ORGANIC SYNTHESIS AND ANALYSIS. A laboratory course in synthetic organic chemistry. May be taken with course 112. (3-5) MR. CALVERT; MISS NIGHTINGALE

121s, f, and w. QUANTITATIVE CHEMICAL ANALYSIS. Prerequisite, course 27. The general principles. (5) MR. BRECKENRIDGE

122s, f, and w. QUANTITATIVE CHEMICAL ANALYSIS. Prerequisite, course 121. The analysis of commercial materials and products. (5) MR. BRECKENRIDGE

124s and f. QUANTITATIVE ORGANIC ANALYSIS. Must be preceded or accompanied by course 121. Quantitative analysis of commercial organic products. (3-5) MR. FRENCH

130s and w. PHYSICAL CHEMISTRY. Prerequisite, college course in physics, 3 hours quantitative analysis, 3 hours of organic chemistry. Recommended to students majoring in biological sciences, home economics, and students specializing in agriculture. (3) MR. STEARN

131f. PHYSICAL CHEMISTRY. Prerequisite, courses 110 and 121; college course in physics; preceded or accompanied by mathematics 106. MR. STEARN

133w. ELECTRO-CHEMISTRY. Prerequisite, course 130 or 131. Generally offered alternate years. (4) Credit to graduate students (3) but with 200 rating. MR. STEARN. Given in 1931.

135w. RADIOACTIVITY AND STRUCTURE OF MATTER. Prerequisite, undergraduate courses in physics and chemistry. Generally offered alternate years. To be given in 1931-32. (4) With laboratory work (5) or (6); credit to graduate students (3), but with 200 rating. MR. SCHLUNDT

141f. INDUSTRIAL CHEMISTRY. Prerequisite, courses 110 and 121. (3) MR. LORAH

151. PRINCIPLES OF CHEMICAL ENGINEERING. See under Chemical Engineering. Courses above 200 must be preceded by a major in chemistry or accompanied by courses required to complete the major.

201w. ADVANCED INORGANIC CHEMISTRY. Must be preceded by 131. Lectures and recitations. (3) MR.

207f. COLLOID CHEMISTRY. See Agricultural Chemistry, 207f.

211f. ADVANCED ORGANIC CHEMISTRY. Prerequisite, 112 and 121. Lectures on selected topics, supplemented by reading and reports. In the selection of the subject the special needs of the students will be considered. Three lectures per week. A reading knowledge of French or German is very desirable. (4) MR. CALVERT

212w. ADVANCED ORGANIC CHEMISTRY. Prerequisite, courses 112 and 121. Continuation of 211. Three lectures per week. (4) MR. CALVERT

213w. RECENT THEORIES IN ORGANIC CHEMISTRY. Prerequisite, a major in chemistry (2) MR. FRENCH

225s and w. QUALITATIVE ORGANIC CHEMISTRY. Must be preceded by or accompanied by 112. (4) MR. FRENCH

227w. ADVANCED ANALYTICAL CHEMISTRY. Prerequisite, course 121. Chiefly laboratory work. The work of the course is varied to meet the needs of the individual (Credit to be arranged.) MR. BRECKENRIDGE

231f and w. PHYSICO-CHEMICAL CALCULATIONS. Prerequisite, 131. (2) MR. STEARN

232w. ADVANCED PHYSICAL CHEMISTRY. Prerequisite, course 131. (2) MR. STEARN

233w. ELECTRO-CHEMISTRY. Prerequisite, 131. (3) Generally offered alternate years. Given in 1930-1931. MR. STEARN

235w. RADIOACTIVITY AND STRUCTURE OF MATTER. Study of the radio elements, and their radiations, atomic disintegration, atomic structure, applications of radioactivity to problems in chemistry, geology, and physics. Generally offered alternate years. (3) MR. SCHLUNDT

260f and w. SEMINARY. Meetings at which subjects of chemical interest are discussed by students of sufficient attainment and members of the teaching staff. A reading knowledge of French and German is desirable. (1).

271s, f and w. RESEARCH. Arrangements for research should be made by consultation with the professor or instructor with whom the research is elected.

The University of Missouri Section of the American Chemical Society meets monthly. Students may attend these meetings. Special lectures by prominent chemists will be given during the year.

CIVIL ENGINEERING

106w. CITY PLANNING. Prerequisite, course 104. Planning city layouts and additions from topographic maps. (2) MR. WILLIAMS

112f and w. BUSINESS RELATIONS. Prerequisite, senior standing. The Engineer's business relations as developed in connection with the design, construction, operation, and management of projects. Construction and contracting. (3) MR. RUBEY

113w. ECONOMY OF RAILWAY OPERATION. Prerequisite, course 111. Treated from the engineering point of view. (2-3) MR. RUBEY

133w. TESTING LABORATORY. Prerequisite, course 32. Experimental investigation of the properties of the materials of construction. (1) MR. LARUE

134w. ROAD MATERIALS. Properties of materials used in highway construction; laboratory tests of road materials. (3) MR. LARUE

141f. WATER POWER. Prerequisite, 140. Hydrology; steam measurement, weirs, current meters, storage reservoirs and dams; water-wheels; the problem of a water-power development. (3) MR. RODHOUSE

143w. HYDRAULIC ENGINEERING. Prerequisite, 140. A general course in hydraulic engineering, including the application of the principles of hydraulics to typical problems in the general field of hydraulic design and construction; problems common to water supply, water power development, sanitary, drainage and irrigation works. (3) MR. RODHOUSE

155w. HIGHWAY ENGINEERING. Prerequisite, course 151. Management, improvement, and maintenance of earth roads; plans and estimates for road improvement; construction and maintenance of street pavements. (2) MR. LARUE

157w. SANITARY DESIGN. Prerequisite, course 140. Design of sewerage systems and works for water and sewage treatment. (2) MR. McCAUSTLAND

201w. GEODETIC SURVEYING. Prerequisite, course 104. Elements of geodesy, with practice in the use of precise instruments. (2) MR. WILLIAMS

214w. RAILWAY ENGINEERING AND MANAGEMENT. To be preceded or accompanied by course 113. Treated from the point of view of the executive trained in engineering. (2-3) MR. RUBEY

215w. CONSTRUCTION AND CONTRACTING. Prerequisite, course 112 or equivalent. Consideration of the larger and more complex projects. (2-3) MR. RUBEY

222f. BRIDGE DESIGN. Prerequisite, course 121. Design of stringer bridges, plate girders, and steel railroad truss bridge, with working drawings and estimates. (3) MR. HYDE

223w. HIGHER STRUCTURES. Prerequisite, course 222. Swing bridges; arches; suspension and cantilever bridges; deflection of trusses. (3) MR. HYDE

226w. CONCRETE STRUCTURES. Prerequisite, course 125. Theory of reinforced concrete structures with problems in design. (3) MR. HYDE

227f. THEORY OF STRUCTURES. Prerequisite, 223. Statically indeterminate structures; secondary stresses. Credit to be arranged. MR. HYDE

231f or w. EXPERIMENTAL INVESTIGATION. Laboratory investigations concerning the properties and uses of the materials of construction. Credit to be arranged.

241f. ADVANCED HYDRAULIC ENGINEERING. Prerequisite, course 141 or 143. Problems in design and construction relating to reservoirs, dams, conduits, waterways and general hydraulic engineering. (3) MR. RODHOUSE

243f. IRRIGATION AND DRAINAGE. Prerequisite, 140. Irrigation engineering, institutions, and practice; canals, ditches, reservoirs; land drainage. (2) MR. RODHOUSE

256f. HIGHWAY DESIGN. Prerequisite, courses 125 and 151. Design of highway structures, culverts, walls, small bridges; plans and estimates for highway improvement. (2) MR. LARUE

257f or w. **SANITARY ENGINEERING.** Investigations and special problems in sanitary engineering. Credit to be arranged. **MR. McCAUSTLAND**
 298f and 299w. **THESIS.** An independent investigation or design, with complete report or discussion of results. (Max. of 6.)

CLASSICAL LANGUAGES AND ARCHAEOLOGY

CLASSICAL ARCHAEOLOGY

106f. **GREEK ART TO THE AGE OF PERICLES.** The history of Greek Sculpture and the development of Greek Architecture and its plastic decoration. (3) **MR. MILLER**

107w. **GREEK ART FROM THE AGE OF PERICLES TO ROMAN TIMES.** Continuing course 106. (3) **MR. MILLER**

108f. **MYCENAEAN ART OR ART OF PRIMITIVE GREECE.** A detailed study of the discoveries at Troy, Mycenae, Cnossus, and other Mycenaean sites. (1) **MR. MILLER**

110w. **ROMAN LIFE.** A study of the extant remains, particularly those of Rome, Pompeii, and Herculaneum. Lectures and readings. Illustrated by use of plans, maps, and lantern slides. (2) **MISS JOHNSTON**

118f. **TOPOGRAPHY AND MONUMENTS OF ROME.** Illustrated by use of plans, maps, and lantern slides. (2) **MR. GWATKIN**

214f and 215w. **TOPOGRAPHY AND MONUMENTS OF ATHENS.** Prerequisite, a reading knowledge of Greek, French, and German. Frazer's Pausanias will be taken as the basis of discussion. (2)

216s and f and 217w. **ARCHAEOLOGICAL SEMINARY.** Hours and work to be arranged.

MUSEUM OF ART: The Museum occupies the third floor of the west wing of Jesse Hall. It is supplied with models of temples representing the three orders of Greek architecture and with plaster casts of representative specimens of Greek and Roman sculpture. These are arranged chronologically, and on the walls are hung framed photographs of other works of classic art.

For Renaissance and modern painting, as well as for ancient art and topography, the Museum possesses also a large number of photographs, photogravures, and colored reproductions of masterpieces of art, and an extensive collection of lantern slides.

GREEK

105w. **GREEK TRAGEDY.** (3) **MR. GWATKIN**

106f. **THE GREEK HISTORIANS.** Reading of Herodotus and Thucydides. (3) **MR. GWATKIN**

107w. **GREEK PHILOSOPHY.** Reading of Plato. (3) **MR. MILLER**

216. **HESIOD AND HOMERIC HYMNS.** (3)

217f and 218w. **HOMER: THE ILIAD AND THE ODYSSEY.** (2-3) **MR. MILLER**

222. **SEMINARY.** Graduate work conducted in accordance with the needs of the graduate students in classics. **MR. MILLER**

LATIN

Prerequisite for graduate work: The student who elects Latin as his major must have made the equivalent of a Latin major in his undergraduate work. The student who elects Latin as a minor should have made the equivalent of a Latin minor, or more, of which at least ten hours credit should have been made in upperclass courses. A reading knowledge of French or German is required.

The following courses may be counted for either major or minor:

- 100w. LATIN PROSE COMPOSITION. Advanced course. Prerequisite, course 50.
 (1) MR. GWATKIN
 101f. HORACE: SATIRES AND EPISTLES. Prerequisite, courses 20 and 30 or equivalent. (2½-3) MR. MILLER
 103f. CICERO'S LETTERS. Prerequisite, courses 101 and 102. (3) MISS CAUTHORN
 104w. JUVENAL'S SATIRES. Prerequisite, courses 101 and 102. (3) MISS CAUTHORN
 106f. CATULLUS: SELECTED POEMS. Prerequisite, courses 101 and 102. Not given in 1931-32. (3) MISS CAUTHORN
 108w. VERGIL'S AENEID: VI-XII. Prerequisite, courses 101 and 102. Not given in 1931-32. (3) MISS CAUTHORN
 109w. LATIN COMEDY. Prerequisite, courses 101 and 102. (3) MR. GWATKIN
 110f. TACITUS: ANNALS. Prerequisite, courses 101 and 102. Not given in 1931-32. (3) MR. GWATKIN
 115f and s and 116w. RAPID READING. Prerequisite, courses 101 and 102 or equivalent. Readings from representative authors. (2) MR. GWATKIN; MR. MILLER
 125w. LUCRETIUS. Prerequisite, courses 101 and 102. MR. MILLER
 205w. EPIGRAPHY. (2) MR. GWATKIN
 210f and 211s and w. HISTORY OF LATIN LITERATURE: a. From the beginning to the Augustan Age; b. The Augustan Age to the Period of Decline. Studied through selections from the authors of various periods. (3) MISS JOHNSTON
 217s and f and 218w. SEMINARY. The graduate work in Latin centers in the seminary. The subject for the year 1931-32 will be a critical study of Horace's Odes and Latin Lyric poetry, with papers and discussions by the members. (3) MR. MILLER
 230s. RESEARCH AND THESIS WORK. (1-3) MISS CAUTHORN; MR. GWATKIN; MISS JOHNSTON

SANSKRIT AND COMPARATIVE PHILOLOGY

- 218s and f. HISTORICAL GREEK GRAMMAR. Phonology and morphology. The lectures will deal systematically with noun and verb inflection within the Greek language itself. The student should procure Brugmann's *Griechische Grammatik* and Solmsen's *Inscriptiones Graecae ad illustrandas dialectos selectae*. (3)
 219w. HISTORICAL LATIN GRAMMAR. The sounds and inflections of the Latin language will be set forth briefly in lectures. The student should own Lindsay's *Latin Language* and the same author's *Latin Inscriptions*. (3) Not given in 1931-32.
 220f. ELEMENTARY SANSKRIT. Elements of the language. Translation of Sanskrit into English and English into Sanskrit. Thorough drill in forms. Whitney's *Sanskrit Grammar*; Lanman's *Sanskrit Reader*. (3) MR. MILLER
 221w. Continuation of 220f. (3)

DAIRY HUSBANDRY

- 100w. DAIRY CATTLE AND MILK PRODUCTION. Deals with the problems of the milk producer, dairy cattle breeder, and dairy farm manager. (3) MR. RAGSDALE
 101f. DAIRY PRODUCTS. Fundamental principles concerning the handling of market milk and the manufacture of butter, ice cream, cheese, and dairy by-products are taught. (3) MR. REID; MR. POWELL
 102f. DAIRY BACTERIOLOGY. An Applied course teaching the general relation of bacteria to milk and its products. (4) MR. GARRISON

103s and w. MARKET MILK AND MILK INSPECTION. A study of market milk, transportation, handling, delivery, marketing, sanitary inspection, equipment of plants, business methods, and problems of public control. (4) MR. GARRISON

104w and 105f. DAIRY CATTLE JUDGING. A study of dairy and breed type, and the use of the pedigree in dairy cattle selection. (2) MR. GIFFORD

106w. DAIRY CATTLE BREEDING. A study of the leading breeds of dairy cattle with respect to their early improvement, leading breeders, great individuals and families. Special application is made of the physiological, genetic, and breeding theories best adapted to dairy cattle improvement. (2) MR. GIFFORD

107w. DAIRY MANUFACTURES. Advanced problems and factors concerned in the manufacture of butter, ice cream, and cheese, and of refrigerating methods in modern creameries, ice cream, and market milk plants. (4) MR. REID; MR. POWELL

108w. DAIRY PLANT MANAGEMENT. The organization, administration, operation, and management of creameries, cheese factories, ice cream, and market milk plants. (2) MR. REID

109f, 110w and 111s. SPECIAL PROBLEMS. Subjects will be assigned or may be selected subject to approval. MR. RAGSDALE; MR. REID; MR. TURNER; MR. GIFFORD

200f and 201w. SEMINARY. The object of this course is to give the students a grasp of the methods employed in scientific research. MR. RAGSDALE; MR. REID; MR. BRODY; MR. TURNER

203f. MILK SECRETION. The comparative anatomy physiology, and genetics of the mammary gland and milk secretion with special reference to the dairy cow. (3) MR. TURNER

204w. DAIRY PHYSIOLOGY AND BIOCHEMISTRY. Selected topics in physiology and biochemistry adapted to the needs of students in Dairy Husbandry. (2) MR. BRODY

205f, 206w, and 207s. SCIENTIFIC READINGS. Leading scientific publications are studied to acquaint the student with research methods and with problems under investigation in the general field of Dairy Husbandry. MR. RAGSDALE; MR. REID; MR. BRODY; MR. TURNER

208f, 209w, and 210s. RESEARCH. Students may select special lines of experimentation and, in some cases, assist with investigations under way in the Agricultural Experiment Station. MR. RAGSDALE; MR. REID; MR. BRODY; MR. TURNER

ECONOMICS AND FINANCE

In general, it is assumed that the candidate majoring for the M. A. degree in this department will have completed the amount of work required for a major in the department before beginning his graduate work. Serious deficiency in this regard will make obviously impossible the attainment of the M. A. degree within the time ordinarily allowed for it.

105f and w. MONEY, CREDIT, AND BANKING. A study of modern currency and banking systems with especial emphasis upon their place in our present financial organization of economic activities. (5) MR. WOOD

106f and w. TRANSPORTATION AND PUBLIC UTILITIES. The economic and legal principles that relate to railways and other public utilities, applied especially to present-day problems of development and regulation. (3) MR. CURTIS

110f and w. LABOR PROBLEMS. A critical study of labor conditions and of the various ways of improving them. (5) MR. BAUDER

118f and w. CORPORATION FINANCE. Prerequisite, course 105. The purposes and methods pursued in the organization and management of business corporations

and the uses and character of corporation securities as related to the investors and to the corporation's management. (3) MR. HARTKEMEIER

132w. BANK MANAGEMENT. Prerequisite, course 105. The work of the course is divided between a consideration of the managerial problems that confront bank executives and the technique of banking practice. (2) MR. BAUER

136w. PERSONNEL MANAGEMENT. The principles and practices of personnel relations in industry and the development of labor policy. Such subjects as employment methods, labor turnover, safety programs, health, employee training, and welfare activities will be studied. (3) MR. BAUDER

137f. FACTORY MANAGEMENT. Covers some economic problems connected with the location, organization, and operation of manufacturing plants. (3) MR. BAUDER

138f. MERCANTILE ORGANIZATION AND CREDITS. Prerequisite, Accounting 17. A study of the administration of the relations of business enterprise with outside parties—current creditors, customers, etc.—with especial emphasis on retail selling methods. (3) MR. BAUER

140f. HISTORY OF COMMERCE AND INDUSTRY. This course is built around a study of the development of markets. The evolution in the forms of market organization will be analyzed, particularly in relation to changes in industrial processes but also in relation to changes in political and social institutions. (3) MR. BAUDER

141w. AMERICAN INDUSTRIAL EVOLUTION. The development of industrial organization in the United States, chiefly in terms of technological and market change. Special emphasis is given to the development of economic organization, the business corporation, trade unionism, employers associations, and trade associations. (3) MR. BAUDER

150f and w. BUSINESS LAW. A study of normal business relations in their legal aspects. Selected cases on contracts, sales, agency, negotiable instruments and other branches of the law. (3) MR. CURTIS

211f. ADVANCED ECONOMIC THEORY. A critical examination of the writings of leading modern economists, to the end of constructing a correct theory of value and distribution. (5) MR. BROWN

215w. TAXATION. An intensive study of the theory of taxation. (3-5) MR. BROWN

219f. PROBLEMS OF ECONOMIC CONTROL. This course deals especially with the trust movement and related topics. (3) MR. CURTIS

222f INVESTMENT BANKING AND THE THEORY OF INVESTMENTS. A study of investment banking institutions, the theory of interest, and the mathematical theory of investments. (2) MR. HARTKEMEIER

223f and 223w. SEMINARIES. (Credit to be arranged).

224w. INTERNATIONAL TRADE THEORY. A study of the theory of international trade, its mechanism, tariff restrictions, etc. (3-5) MR. BROWN.

227w. CLASSICAL ECONOMIC THEORY. Selections from the writings of Smith, Malthus, Ricardo, Mill, and Senior will be read and discussed from the point of view of modern economic theory. The writings of some of the contemporary critics of the classical school will also be considered; and an attempt will be made to relate the economic thought to the political and economic problems of the period. It is desirable that students should have some acquaintance with the political and economic history of England from 1776 to 1850. (3-5) MR. WOOD

230f. ADVANCED MONETARY THEORY. (Not given in 1931-32). A study of modern monetary and credit theories combined with a statistical study of the current banking and credit situation in the United States. (3-5) MR. WOOD

231f. CURRENT MONETARY PROBLEMS. A study of recent currency and banking happenings in several of the more important European countries with particular

reference to their bearing on monetary theory. A statistical study of the current credit situation in the United States. (3-5) MR. WOOD

EDUCATION

Prerequisite: To be admitted to candidacy for the degree of Master of Arts with a major in Education, students must have completed at least 15 semester hours of professional education courses, including courses in educational psychology, history and principles of education, school administration, and methods of teaching.

CHOICE OF MAJOR ADVISER

Graduate students in education should first of all decide on the particular line of school work for which they wish to prepare. They should then consult the faculty adviser in the field of their major interest and in consultation with him make out a complete program of studies for the desired degree. Some of the fields of specialization follow along with the names of the appropriate advisers in the Department of Education:

<i>Graduate Specialty</i>	<i>Faculty Adviser</i>	<i>Room No.</i>
School Supervision	Mr. Phillips	Elem. School
High School Teaching	Mr. Watkins	Univ. H. S.
High School Administration	Mr. Rufi	304 Jesse Hall
	Mr. Elliff	203 Jesse Hall
History and Philosophy of Education	Mr. Coursault	104 Jesse Hall
City, County, and State School Administration	Mr. Capps	104 Jesse Hall
	Mr. Carpenter	304 Jesse Hall
	Mr. von Borgrersrode	7 Jesse Hall
Educational Tests and Measurements	Mr. Capps	104 Jesse Hall
	Mr. Saupe	408 Jesse Hall
Educational Psychology	Mr. Irion	120 Jesse Hall
	Mr. Saupe	408 Jesse Hall
Teaching of English	Mr. Moffett	209 Jesse Hall
Industrial Education	Mr. Selvidge	111A Eng.
Agricultural Education	Mr. Dickinson	122 Waters
Teaching and Supervision of Abnormal and Defective Children	Mr. Saupe	408 Jesse Hall
Home Economics Education	Miss Irons	8 Gwynn Hall

COURSES RECOMMENDED FOR ALL GRADUATE STUDENTS IN EDUCATION

For many lines of graduate work in education advisers insist on students having during the first semester the following courses if they have not been taken as undergraduate work:

EDUCATION C170 EDUCATIONAL STATISTICS

EDUCATION C205 ADMINISTRATION OF EDUCATIONAL TESTS AND MEASUREMENTS

MENTS

General background courses commonly recommended for all graduate students in education who have not had the equivalent as undergraduate work are:

C209f ADMINISTRATION OF PUBLIC EDUCATION IN U. S.

A205f PSYCHOLOGY OF EDUCATION

B271f PHILOSOPHY OF EDUCATION

DISSERTATION OPTIONAL FOR THE DEGREE OF MASTER OF ARTS WITH MAJOR IN EDUCATION

A dissertation is not required of students majoring in education for the degree of Master of Arts. However, a student may offer, subject to the approval of his major adviser, an acceptable dissertation counting four to eight hours' credit in the total of thirty-two hours required for this degree.

SAMPLE GRADUATE PROGRAMS OF STUDY

Thirty-two semester hours of work are required for the master's degree. At least half of this must be in courses numbered 200 and above. While the advisers take into consideration the individual needs and desires of the students as well as the previous training which the student has had, it may be suggestive to list certain sample graduate programs for students majoring in Education:

SUGGESTED GRADUATE CURRICULUM FOR ELEMENTARY SCHOOL PRINCIPALS

A205	Psychology of Education.....	3 hrs.
A176	Psychology of Elementary School Subjects.....	3 hrs.
A202	Intelligence Testing.....	3 hrs.
B271	Philosophy of Education.....	3 hrs.
C208	The Work of the Elementary School Principal.....	3 hrs.
C170	Educational Statistics.....	3 hrs.
C210	City School Administration.....	3 hrs.
C205	Administration of Educational Tests and Measurements.....	3 hrs.
D270	Curriculum Construction.....	2 hrs.
D225	Practice in Supervision.....	3 hrs.
D204	Elementary School Supervision.....	3 hrs.
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		32 hrs.

SUGGESTED GRADUATE CURRICULUM FOR SUPERVISORS IN ELEMENTARY SCHOOLS

A205	Psychology of Education.....	3 hrs.
A176	Psychology of Elementary School Subjects.....	3 hrs.
A202	Intelligence Testing.....	3 hrs.
B271	Philosophy of Education.....	3 hrs.
C210	City School Administration.....	3 hrs.
C205	Administration of Educational Tests and Measurements.....	3 hrs.
C170	Educational Statistics.....	2 hrs.
D204	Elementary School Supervision.....	3 hrs.
D270	Curriculum Construction.....	2 hrs.
D225	Practice in Supervision.....	3 hrs.
D265	Research in Supervision.....	4 hrs.
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		32 hrs.

SUGGESTED GRADUATE CURRICULUM FOR HIGH SCHOOL PRINCIPALS

(Starred courses are required)

*A205	Psychology of Education.....	2½-3 hrs.
*B271	Philosophy of Education.....	2½-3 hrs.
*C201	Extra-Curricular Activities.....	2½-3 hrs.
*C206	High School Administration.....	2½-3 hrs.

*C209	Administration of Public Education in the United States.....	2½-3 hrs.
*C230	The Junior High School.....	2 hrs.
*C215	High School Supervision (or D205).....	2½-3 hrs.
*C220	The High School Curriculum.....	2½-3 hrs.
*C207	Tests and Measurements for Secondary Schools.....	2½-3 hrs.
*D205	Junior High School Supervision (or C215).....	2½-3 hrs.
		22-26 hrs.

ADDITIONAL COURSES TO MAKE UP THE REQUIREMENT OF THIRTY-TWO HOURS ARE
TO BE SELECTED FROM THE COURSES LISTED BELOW:

C210	City School Administration.....	3 hrs.
I245	Junior College Administration.....	3 hrs.
I275	College Teaching Methods.....	2½ hrs.
D240	Improvement of High School Teaching.....	2 hrs.
A208	Psychology of High School Subjects.....	2½ hrs.
C211	Child Accounting.....	3 hrs.
C212	School Building Problems.....	3 hrs.
C240	School Finance.....	3 hrs.
C245	Public School Relations.....	2-3 hrs.
D184	Projects in Moral Education.....	2 hrs.
C221	Educational Guidance.....	2½-3 hrs.
C224	Advisement of Girls in Sr. H. S. & Jr. College.....	2½-3 hrs.
C170	Educational Statistics.....	2½-3 hrs.
C205	Administration of Educational Tests and Measurements.....	2½ hrs.
D250	Research in High School Teaching.....	1-3 hrs.
C260	Seminary in Secondary Administration.....	Arr.
	See courses in Agriculture, Elementary Education, Industrial Education, etc.	

SUGGESTED GRADUATE CURRICULUM FOR SCHOOL SUPERINTENDENTS

A205	Psychology of Education.....	3 hrs.
A202	Intelligence Testing.....	3 hrs.
B271	Philosophy of Education.....	3 hrs.
C209	Administration of Public Education in the U. S.....	3 hrs.
C210	City School Administration.....	3 hrs.
C211	Child Accounting.....	3 hrs.
C212	School Building Problems.....	3 hrs.
C215	High School Supervision.....	3 hrs.
C240	School Finance.....	2 hrs.
D204	Elementary School Supervision.....	3 hrs.
C205	Administration of Educational Tests and Measurements.....	3 hrs.

32 hrs.

SUGGESTED GRADUATE CURRICULUM FOR STUDENTS SPECIALIZING IN EDUCATIONAL PSYCHOLOGY

First Graduate Year

Fall Semester			Winter Semester			
A205f	Psychology of Educa- tion.....	3 hrs.	}	A176w	Psychology of Eleme- ntary School Subjects	
A202f	Intelligence Testing.....	3 hrs.			or	
C170f	Educational Statistics.....	3 hrs.		A208w	Psychology of High School Subjects.....	3 hrs.
106f	or 111f Genetics.....	2 hrs.		}	C205w	Administration of Tests and Measure- ments or
	Minor Subject.....	5 hrs.	C210		City School Adminis- tration.....	3 hrs.
			125w		Social Psychology.....	3 hrs.
	Minor Subject.....			Minor Subjects.....	7 hrs.	
	Total.....	16 hrs.		Total.....	16 hrs.	

Second Graduate Year

Fall Semester			Winter Semester			
B271f	Philosophy of Educa- tion.....	3 hrs.	}	A206w	Mental Hygiene.....	3 hrs.
A265f	Research Techniques in Educational Psychol- ogy.....	3 hrs.		A176w	Psychology of Elem. School Subjects or	
102f	Abnormal Psychology....	3 hrs.		A208w	Psychology of High School Subjects.....	3 hrs.
105f	Neurology.....	3 hrs.		A215w	Research, or a course in General Psychol- ogy.....	2 hrs.
	Minor Subject.....	4 hrs.		Minor Subjects.....	8 hrs.	
	Total	16 hrs.		Total.....	16 hrs.	

Third Graduate Year

Fall Semester			Winter Semester			
A250f	Seminary in Education- al Psychology.....	5 hrs.	}	A250w	Seminary in Educ. Psychology.....	5 hrs.
A215f	Research, or A Course in General Psychology.....	3 hrs.		A207w	Differential Psychology.....	3 hrs.
	Minor Subject.....	4 hrs.		A Course in General Psychology.....	2 hrs.	
	Total.....	12 hrs.		Minor Subject.....	2 hrs.	
				Total.....	12 hrs.	

EDUCATIONAL PSYCHOLOGY

A176s and w. Prerequisite, A102. PSYCHOLOGY OF ELEMENTARY SCHOOL SUBJECTS. The applications of Educational Psychology to the teaching of elemen-

tary school subjects. For supervisors, superintendents, and advanced students of educational psychology. (2) MR. GERMANE; MR. SAUPE

A201s and w. CURRENT PROBLEMS. Current problems in education from the point of view of psychology. Informal discussions and reports of current literature of educational psychology. (1) MR. IRION

A202s, f, and w. INTELLIGENCE TESTING. Group intelligence testing including a critical study of various tests and practice in their administration. This course will also include a study of individual mental testing and the uses to be made of results in the classification and treatment of pupils. (3) MR. SAUPE

A203s. PSYCHOLOGY OF THE PRE-SCHOOL CHLD. Prerequisite, undergraduate course in educational psychology. Current studies in mental development of early childhood, testing technique, with applications to pre-school and primary education. (2½) MR. SAUPE

A205s, f, and w. THE PSYCHOLOGY OF EDUCATION. An advanced course covering the whole field of educational psychology. The course will consist of lectures and a study of the systematic and experimental literature in the field of educational psychology. (3) MR. IRION; MR. SAUPE

A206s and f. MENTAL HYGIENE. Psychology of personal adjustment as related to the problems of junior and senior high school students. Will deal primarily with emotions, personality, development, hereditary tendencies, causes of maladjustment, guidance. (2½-3) MR. IRION

A207w. DIFFERENTIAL PSYCHOLOGY. Prerequisite, 20 semester hours of professional work in education, including at least two courses in educational psychology. Presented primarily from the research point of view. Application to school procedure will be stressed. Major emphasis will be placed on the causes of, conditions affecting, and the measurement of individual differences. (3) MR. IRION

A208s and w. Prerequisite, A102s. PSYCHOLOGY OF HIGH SCHOOL SUBJECTS. Deals with the specific applications of educational psychology to high school teaching. For high school teachers and principals. (2½-3) MR. IRION

A215s, f, and w. RESEARCH IN EDUCATIONAL PSYCHOLOGY. Special investigations for advanced students. (Credit to be arranged.) MR. IRION; MR. SAUPE

A250s, f, and w. SEMINARY IN EDUCATIONAL PSYCHOLOGY. Prerequisite, considerable training in both education and psychology. For thesis work. (Credit to be arranged.) MR. IRION; MR. SAUPE

A265s, f, and w. RESEARCH TECHNIQUES IN EDUCATIONAL PSYCHOLOGY. Prerequisite, considerable training in both general and educational psychology, including training in psychological method. Original investigation of problems in the field of educational psychology. Studied from the point of view of comprehending research techniques. (Credit to be arranged.) MR. IRION

THE HISTORY AND PHILOSOPHY OF EDUCATION

B271s, f, and w. PHILOSOPHY OF EDUCATION. A study of the fundamentals of education in the light of modern science and philosophy. (2½-3) MR. COURSAULT

B282s, f, and w. SEMINARY IN THE HISTORY AND PHILOSOPHY OF EDUCATION. Thesis work for graduate degree. (1-3) MR. COURSAULT

EDUCATIONAL ADMINISTRATION

C170s, f, and w. EDUCATIONAL STATISTICS. Statistical methods for teachers, supervisors, superintendents, and beginning graduate students. (2½-3) MR. CAPPS; MR. VON BOGERSRODE

C200f. METHODS OF EDUCATIONAL RESEARCH. Prerequisite, course C170 or

equivalent. Technique of scientific investigation in the field of education. The collection and tabulation of data, preparation of manuscript for theses, dissertations, and printed reports. Special treatment of methods of taking and filing notes and preparation of bibliographies. (2) MR. CAPPS

C201s. EXTRA-CURRICULAR ACTIVITIES. The organization and administration of extra-curricular activities in junior and senior high schools, for high school principals, advisers of girls, and for high school teachers preparing for the management of extra-curricular activities. (2½-3)

C205s, f, and w. ADMINISTRATION OF EDUCATIONAL TESTS AND MEASUREMENTS. Designed to give the administrator, the supervisor, and the teacher the point of view, the knowledge, and the skill necessary to use tests, scales, and other modern measurements in improving classroom instruction in the elementary schools. (2½-3) MR. CAPPS

C206s and f. HIGH SCHOOL ADMINISTRATION. Deals with the problems of administration from the point of view of the high school principal. Prerequisite, C150 or its equivalent. (2½-3) MR. RUFİ

C207s and f. TESTS AND MEASUREMENTS FOR SECONDARY SCHOOLS. Will include a study of the uses of educational tests and measurements in the classification of high school students and in the improvement of instruction in the various subject-matter fields. A portion of the course will be devoted to the construction of tests and examinations by high school teachers. (3) MR. CAPPS

C208s. THE WORK OF THE ELEMENTARY SCHOOL PRINCIPAL. A course designed to cover the special technique needed by the principal of the modern elementary school. (3)

C209s and f. ADMINISTRATION OF PUBLIC EDUCATION IN THE UNITED STATES. A fundamental course in the principles and practices of national, state, and county educational administration. (3) MR. CARPENTER

C210s and w. CITY SCHOOL ADMINISTRATION. For principals, supervisors, and superintendents. Deals with the chief problems of town and city school administration. (3) MR. CARPENTER; MR. GREGORY

C211s and f. CHILD ACCOUNTING. Technique of child accounting with applications to school administration. (3) MR. CARPENTER

C212s and w. SCHOOL BUILDING PROBLEMS. Construction and care of school buildings, school building programs, management of janitorial staff. (3) MR. CARPENTER; MR. GREGORY

C215s and w. HIGH SCHOOL SUPERVISION. Methods of improving instruction in junior and senior high schools. (2½-3) MR. RUFİ

Students who take D205s, Junior High School Supervisor, in addition to this course may receive no more than 4½ hours credit for both courses.

C220s and w. THE HIGH SCHOOL CURRICULUM. Modern principles and practice. A study will be made of some of the better high school curricula and courses of study now in use. Primarily for high school principals and teachers. (2½-3) MR. ELLIFF

C221s. EDUCATIONAL GUIDANCE. The guidance of pupils in junior and senior high school. Will deal with the principles and technique of educational guidance. (2½-3)

C224s. THE ADVISEMENT OF GIRLS IN SENIOR HIGH SCHOOL AND JUNIOR COLLEGE. A course for deans of women and advisers of girls, women vice-principals and teachers interested in advisory work. (2½-3)

C225s. SPECIAL PROBLEMS IN THE ADVISEMENT OF WOMEN. A course for deans of women, personnel workers and student counselors with experience and previous training in this field. Special emphasis will be placed on the detailed procedures relating to personnel work in senior high school and junior college. (2½-3)

C230s and w. **THE JUNIOR HIGH SCHOOL.** A survey of the progress of the junior high school, including a study of the more important problems of organization and administration. (2) MR. ELLIFF

C235s. and w. **ADVANCED EDUCATIONAL STATISTICS.** Prerequisite, courses C170 and C205, or their equivalent. Advanced problems in partial correlation, reliability, and test and scale construction. (2½) MR. CAPPS

C240s and f. **SCHOOL FINANCE.** The legal basis of school finance; state aid, taxation, and valuation; relation of school expenditures to wealth of district, to expenditures in past. School budgets and school accounting. (3) MR. CARPENTER; MR. VON BORGERSRODE

C241s and w. **ADVANCED PROBLEMS IN SCHOOL FINANCE.** An advanced course in accounting procedure for local school systems. (3) MR. VON BORGERSRODE

C246s and w. **SCHOOL SURVEYS.** An advanced course for students in school administration; considers the technique of the school survey and its use as an instrument of self-appraisal. (3) MR. CARPENTER

C250f, w, and s. **RESEARCH IN EDUCATIONAL ADMINISTRATION.** The solution of a practical problem by the use of the techniques of scientific investigation in the field of education. (Credit to be arranged.) MR. CAPPS; MR. CARPENTER; MR. VON BORGERSRODE

C260s, f, and w. **SEMINARY IN SECONDARY EDUCATIONAL ADMINISTRATION.** (Credit to be arranged.) MR. ELLIFF; MR. RUFF

C265s, f, and w. **SEMINARY IN EDUCATIONAL ADMINISTRATION.** (Credit to be arranged.) MR. CAPPS; MR. CARPENTER; MR. VON BORGERSRODE

SCHOOL SUPERVISION

D108s. **PRIMARY MATERIALS AND METHODS.** A study of the materials used in the first three grades of modern elementary schools, and the methods which should underlie the presentation of these materials in the instruction of children. (3)

D125s. **PRIMARY MATERIALS AND METHODS IN READING.** A study of the materials used in the first three grades of modern elementary schools, and the methods which should underlie the presentation of these materials in the instruction of children. Prerequisites, A102 Educational Psychology and D121 Technique of Teaching in Elementary Schools. (3)

D129s. **THE TECHNIQUE OF HANDLING THE PROBLEM CHILD.** A study of the different types of problem children along with the methods of treatment to be used by the classroom teacher in connection with each type. (3)

D163s. **INDIVIDUALIZED INSTRUCTION.** Theory and technique of Dalton Laboratory plan, Winnetka plan, and others, with discussion of observations of demonstration class in University Elementary School. (3)

D165s and w. **THE TEACHING OF READING.** Fundamental problems in the teaching of silent reading. For teachers, supervisors, and superintendents. Selection of material and methods for grades I to IX. (2) MR. GERMANE

D170s. **ELEMENTARY SCHOOL CURRICULUM.** A study of the modern elementary school curriculum from the point of view of objectives, methods and materials with suggestions regarding its practical reorganization. (3)

D172s and w. **THE TEACHING OF JUNIOR HIGH SCHOOL SCIENCE.** For teachers and supervisors of science. Problems of organization, content, and teaching content. Includes a summary of investigations on teaching of science. (2) MR. WATKINS

D184s and w. **PROJECTS IN MORAL EDUCATION.** In this course two of the vital points in character education will be stressed, namely: (1) What are the psychological and environmental factors in the home, school, and community that affect human

conduct? (2) What are the social situations in the home, school, and community that offer greatest opportunity for a united training in the making of desirable and wholesome social adjustments? (2) MR. GERMANE

D204s and w. ELEMENTARY SCHOOL SUPERVISION. A study of the modern technique of improving the work of the classroom teacher in the elementary schools. (3) MR. PHILLIPS

D205s. JUNIOR HIGH SCHOOL SUPERVISION. Special instructional problems of junior high school and junior high school courses of study. (2½-3) Students who take C215, High School Supervision, in addition to this course may receive no more than 4½ hours credit from both courses.

D210s and w. PROBLEMS IN ENGLISH METHOD. An investigation of the aims, means and methods in English instruction in the schools. (2-3) MR. MOFFETT

D220s. PROBLEMS IN THE TEACHING OF SOCIAL STUDIES. A graduate course dealing with special problems of method and curriculum in the teaching of Social Studies in Junior and Senior High Schools. Open to graduate students with a major or minor in the Social Studies. (3) MR. ELLIS

D225s. PRACTICE IN SCHOOL SUPERVISION. For supervisors, principals, and superintendents. (3) MR. PHILLIPS

D240f and s. THE IMPROVEMENT OF HIGH SCHOOL TEACHING. For high school teachers who have had considerable training in education and experience in teaching. Deals with recent developments in high school teaching, descriptions and evaluations of improved procedures. (2) MR. WATKINS

D250s, f, and w. RESEARCH IN HIGH SCHOOL TEACHING. (1-3) MR. WATKINS

D251s, f, and w. SEMINARY IN HIGH SCHOOL TEACHING. Thesis work for graduate students. Opportunity is offered for experimental studies in the University High school. (Credit to be arranged.) MR. WATKINS

D264s, f, and w. RESEARCH IN SCHOOL SUPERVISION. (1-3) MR. PHILLIPS

D270s and f. CURRICULUM CONSTRUCTION. Study of the principles and techniques of curriculum construction. (2-3) MR. PHILLIPS; MR. VON BORGERSDRODE

D280s, f, and w. SEMINARY IN SCHOOL SUPERVISION. Thesis work for graduate students. Opportunity is offered for experimental studies in the University Elementary School. (Credit to be arranged.) MR. PHILLIPS

AGRICULTURAL EDUCATION

E107s and f. SUPERVISED PRACTICE IN VOCATIONAL AGRICULTURE. This course includes a study of the principles and practices involved in the use of the project and other forms of supervised practice as they should be applied in the teaching of Vocational Agriculture. Project study, outlining and planning, and supervision are discussed in a manner applicable to actual conditions. (2) MR. DICKINSON

E117s and w. VISUAL EDUCATION. A course in methods and technique of visual education. Special emphasis is placed on graphs, charts, slides, and motion pictures, their effective use in teaching and planning of lessons involving their use. Motion picture machines and stereopticons are studied. Laboratory work in construction and use of visual aids. (2) MR. DICKINSON

E120s and w. COMMUNITY EDUCATIONAL ACTIVITIES IN VOCATIONAL AGRICULTURE. A study of the problems involved in part-time instruction, evening courses, prevocational agriculture, boys' and girls' clubs, extension work, co-operation with other agencies, and demonstration and promotion activities. (2) MR. DICKINSON

E210s, f, and w. SPECIAL PROBLEMS IN VOCATIONAL AGRICULTURE. Discussion and presentation of papers on assigned topics having to do with agricultural education. (Credit to be arranged.) MR. DICKINSON

E236s, f, and w. RESEARCH IN AGRICULTURAL EDUCATION. (Credit to be arranged.) MR. DICKINSON

E240s, f, and w. SEMINARY IN AGRICULTURAL EDUCATION. (Credit to be arranged.) MR. DICKINSON

E245s. ORGANIZATION AND METHOD IN TEACHING FARM MECHANICS. The course consists of a detailed study of the problems involved in the organization and presentation of the Farm Shop and other mechanics courses offered in the high school department of Vocational Agriculture. New and desirable practices are discussed in an effort to offer a practical solution for the difficulties involved in teaching farm mechanics courses. (2) MR. DICKINSON

E250s. ADVANCED METHODS IN TEACHING VOCATIONAL AGRICULTURE. The more difficult and involved problems of Vocational Agriculture teachers are studied. Problem planning and presentation, the use of the vocational half-day, and supervised study in agriculture are included. (2) MR. DICKINSON

E255s. ORGANIZATION AND METHOD IN TEACHING FARM MANAGEMENT AND AGRICULTURAL ECONOMICS. A study of course content and methods of presentation for farm management subject matter included in the Vocational Agriculture curriculum. Both regular high school and evening school courses are considered. (2) MR. DIPPOLD

HOME ECONOMICS EDUCATION

F175s, f, and w. THE ORGANIZATION OF VOCATIONAL HOME ECONOMICS. This course includes a study of the objectives of vocational home economics, the organization of subject matter and methods of teaching. (2) MISS IRONS

F273s and f. PROBLEMS OF HOME ECONOMICS EDUCATION. An opportunity is provided here for experienced teachers to study individual problems of teaching, supervision, critic teaching or administration of home economics and related subjects. (3) MISS IRONS

F275s and w. RESEARCH IN VOCATIONAL HOME ECONOMICS. This course is planned for those students in home economics education who wish to have some experience in research and thesis writing. Provision is made for students to present and analyze portions of theses covering special investigations in the field of home economics education. (Credit to be arranged.) MISS IRONS

F276s and w. SEMINARY IN HOME ECONOMICS EDUCATION. This course includes a study of the history of home economics, its development under the vocational program, the newer phases and emphasis of the work and the opportunities for the home economist. (3) MISS IRONS

INDUSTRIAL EDUCATION

G140s. SUPERVISION AND CRITICISM OF ELEMENTARY HANDWORK. (2) MISS DOBBS

G190s and w. ORGANIZATION OF SUBJECT-MATTER. A study and comparison of the types of individual instruction units and teaching plans. The determination of content and the development of written instruction material with a view of providing for individual progress. (2) MR. SELVIDGE

G195s and f. ADMINISTRATION OF INDUSTRIAL EDUCATION. Designed especially for superintendents and principals. The course deals with the purpose and character of industrial work in the junior high school, senior high school, and continuation school. It also covers plans for the organization of subject matter, methods by which administration officers may check results, kind of teachers required, the schedule, equipment, and costs. (2) MR. SELVIDGE

G201s and w. **JOB ANALYSIS APPLIED TO CURRICULUM MAKING.** The course will deal with the organization of the subject-matter of the individual units of the curriculum. The development of instruction sheets will be considered. (2) MR. SELVIDGE

G221s and f. **EDUCATIONAL AND VOCATIONAL GUIDANCE.** The purpose and limitations of guidance, elements to be considered, personal, social and industrial factors, the accidental element, the source of material and the adviser's job. (2) MR. SELVIDGE

G225s, f, and w. **PROBLEMS IN VOCATIONAL EDUCATION.** The study of special problems in the field of industrial education. (Credit to be arranged.) MR. SELVIDGE

G240s, f, and w. **RESEARCH IN INDUSTRIAL EDUCATION.** (Credit to be arranged.) MR. SELVIDGE

COLLEGE TRAINING

I220s. **TEACHING OF ENGLISH IN JUNIOR COLLEGE.** (3) MR. MOFFETT

I245s and w. **JUNIOR COLLEGE ADMINISTRATION.** The organization and administration of the junior college. (3) MR. CARPENTER

I251s. **SEMINARY IN EDUCATIONAL PSYCHOLOGY FOR COLLEGE TEACHERS OF EDUCATION.** (1-3) MR. IRION

I275s and w. **COLLEGE TEACHING METHODS.** Primarily for advanced graduate students who expect to teach in junior or senior colleges, or in teachers' colleges. Important practical matters in college teaching will be considered. Each student will be expected to prepare a syllabus for the teaching of one college course. (2½) MR. COURSAULT

ELECTRICAL ENGINEERING

109w. **ELECTROMAGNETISM.** Prerequisite, course 101. Fundamental principles of electrostatics; applications to symmetrical and unsymmetrical conducting systems. Conduction in continuous current circuits, steady state. Fundamental principles of the magnetic field; application to symmetrical conducting systems in air and to electromagnetic machines. (4) MR. LANIER; MR. ROLAND

110f. **ALTERNATING CURRENTS.** Prerequisite, course 109. Voltage, current and power relations under steady and transient conditions; power measurement. Irregular voltage and current waves. Polyphase systems with balanced and unbalanced loading. (4) MR. WEINBACH; MR. WALLIS; MR. ROLAND

111f. **ELECTRICAL MACHINERY B.** Prerequisite, course 109. Theory and applications of single phase transformers; banks of single phase transformers in polyphase circuits; polyphase transformers. The polyphase induction motor and generator; the single phase induction motor. (4) MR. LANIER; MR. WALLIS; MR. ROLAND

112w. **ELECTRICAL MACHINERY B.** Prerequisite, course 111. Characteristics of single and polyphase synchronous generators and motors. The continuous current dynamo and synchronous converter. Alternating current commutator motors. (4) MR. LANIER; MR. WALLIS; MR. ROLAND

130w. **ELECTRIC POWER DISTRIBUTION.** Prerequisite, course 111. Detailed study of the generation, transmission, and distribution of electrical energy for lighting, power, and electric railways. (3) MR. WEINBACH

134w. **COMMUNICATION.** Prerequisite, course 110. Sound waves; conversion of sound waves into electric waves and vice versa; propagation of electric waves along the transmission line; distortion and attenuation; artificial loading; inductive interference. (3) MR. WEINBACH; MR. WALLIS

150f and w. **ADVANCED ELECTRICAL STUDIES.** Preceded or accompanied by 110f and 111f. Selected analytical or experimental problems pertaining to electrical machinery and systems. MR. LANIER or MR. WEINBACH

210f. **ELECTRICAL MACHINERY C.** Prerequisite, course 112. Multicircuit transformers. Polyphase banks of single phase transformers with unbalanced loading; the method of symmetrical co-ordinates. Effect of voltage unbalance on the performance of polyphase induction and synchronous motors. Performance charts of synchronous machines. (3) MR. LANIER

220w. **ANALYSIS OF ELECTRICAL DESIGN.** Discussion of electrical machine theory as related to design; over-all dimensions; magnetic field mapping; leakage reactance in induction and synchronous machines; commutation in continuous and alternating current machines. (3) MR. LANIER

242w. **HIGH VOLTAGE TRANSMISSION.** Prerequisite, courses 130 and 134. Transmission of electric power. Line regulation. Economic aspects, practical limitations, operative precautions. (3) MR. WEINBACH

280w. **APPLICATION OF MATHEMATICS TO ELECTRICAL ENGINEERING.** Prerequisite, mathematics, course 106. Stating the problem in mathematical form; application of complex numbers, exponential functions, and differential equations to electrical engineering problems. (2) MR. WEINBACH

290f and w. **RESEARCH.** Original investigation in the field of electrical engineering. Students registered for research will have as advisers members of the staff conversant with the problem undertaken. Problems which are at present under investigation or which may be undertaken are: Tooth frequency iron losses in electrical machinery; Properties of insulating materials; Commutation in direct and alternating current machinery; Distortion phenomena in telephone transmission lines.

298f and 299w. **THESIS.** Investigation of some problem of practical value. Results of investigation must be presented at the end of the year in a carefully prepared dissertation. Weekly reports. (4)

ENGLISH

The requirements for the degree of Master of Arts, with English as a major, are as follows: A total of thirty-two hours, with approximately twenty-four hours of class work (at least half of which must be in the 200, i. e., strictly graduate, group) and a thesis upon an approved subject. The thesis may count for as much as eight hours. No fixed body of courses is required, except the two courses in the English language and the course in Chaucer, or equivalents of these.

Some acquaintance with at least two foreign languages (preferably Greek, Latin, German, French) is not only desirable but practically indispensable for the successful pursuit of graduate work in English and is a prerequisite for the two courses in the English language and the course in Chaucer.

In order to secure the degree of Master of Arts in one year, students in English must already have had the equivalent of the English undergraduate major. This major calls for twenty-four hours of work (not counting freshman composition) including at least one course in composition beyond the required freshman courses, one course in the English language or Chaucer (prerequisite stated above), one course in the later literature, and one course in the earlier literature (see pages 106-107 of the current Catalog). Graduates who have not met these requirements may enter, but will require a longer time for the attainment of the degree.

Students electing English as a minor should have had the required part of the undergraduate major (12 hours) plus six hours of upperclass courses in English.

100w. **THE SHORT STORY.** An advanced course in the art of story writing, with criticism, discussion, and conferences. Prerequisite, course 50 or its equivalent. (3) MR. RAMSAY

101f. **ADVANCED WRITING.** Advanced course open to a limited number. Prerequisite, consent of the instructor. (3) MR. RANKIN

102w. **PLAYWRITING.** A course in the fundamental principles of writing the one-act and the longer play for production. Conferences and class discussion. Prerequisite, course 50 or its equivalent and at least two courses in English literature, preferably fiction or drama. Experience in professional writing or success in placing manuscripts or in production may be substituted for formal courses. (3)

104w. **THE BOOK REVIEW AND CRITICAL ESSAY.** Discussion of the appreciation of literature and theories of criticism. Practise in writing reviews and critical essays. (3) MR. RANKIN

105f. **ARGUMENTATION.** Argumentative writing and speaking, with special reference to analysis, briefing, problems of evidence, and types of argument, illustrated by papers and speeches on propositions in the field of public opinion. Prerequisite, course 60 or 75. (3) MR. ALY

106w. **DEBATING.** Application of the principles of argumentation to practice in discussion and debate, especially for development in the technique of influencing belief and conduct through persuasive speaking. Opportunity for experience in training debate teams will be arranged for students preparing to direct debating in high schools. Prerequisite, course 105 or its equivalent. (3) MR. ALY.

107s and f and 108w. **DRAMATIC INTERPRETATION.** Practical application of principles of stage technique and dramatic interpretation; rehearsal and performance; participation in class and public performances; standards of evaluation and appreciation for the best things in the theater. (3) MR. RHYNSBURGER

109w. **STAGECRAFT AND ACTING.** Functions of stage settings; procedure in mounting a play; evolution of the design through sketches, diagrams, colored plates, and miniature models; research in period decoration and costume applied to the theater. Theory and technique of acting; principles of dramatic interpretation and characterization; participation in private class-exercise performances. Prerequisite, course 107. (3) MR. RHYNSBURGER

110s and f. **ADVANCED DRAMATIC PRODUCTION.** Producing director's study and research in the original design of a complete theatrical production. Designed especially for teachers who direct high school plays and arranged to meet their special problems. Prerequisite, course 107. (3) MR. RHYNSBURGER

113w. **VERSIFICATION.** The principles of English verse; the function and values of verse in poetry. (3) MR. BELDEN

114w. **PUBLIC ADDRESS.** The principles of interest and persuasion illustrated by the delivery of speeches for special purposes and occasions: business, professional, social, and ceremonial, with particular attention to the ways and means of influencing various types of audience. Prerequisite, course 75 or the equivalent. (3) MR. GILMAN

115w. **RHETORICAL CRITICISM.** The principles of rhetorical criticism derived from the study of persuasive methods set forth by ancient and modern writers on rhetoric and illustrated in ancient and modern speeches, with particular attention to the ways in which public influence has been exerted and public opinion formed. (3) MR. GILMAN

119s and f. **THE ENGLISH LANGUAGE, PART ONE.** Modern English, looking backward; a survey of the present facts of English, especially its vocabulary, dialects and kindred languages, grammar, and pronunciation, studied in the light of its past history and development. (2½-3) MR. RAMSAY

120w. THE ENGLISH LANGUAGE, PART TWO. Old English, looking forward; an elementary reading knowledge of Old English, with special attention to our modern inheritances from it, both in language and in life. Either Part One (119) or Part Two (120) may be taken first. (3) MR. RAMSAY

125s and f. CHAUCER AND HIS TIME. A careful reading of some of the *Canterbury Tales* and rapid reading of other parts of his work, together with a consideration of the social background of Chaucer's England; introduction to Middle English. (3) MR. RANKIN; MR. BASHE

135f and 136w and s. SHAKESPEARE. *Hamlet, Macbeth, Henry V, The Tempest.* (3) MR. FAIRCHILD; MR. BASHE

145f. MILTON. Life, works, times. (3) MR. FAIRCHILD

155f. THE AGE OF REASON. Dryden and his time; Pope, Swift, and the essayists.

(3) MR. BELDEN

156w. JOHNSON AND HIS TIME. Philosophy, criticism, and social ideas as reflected in English literature from 1730 to 1780. (3) MR. BELDEN

161f. THE RISE OF PROSE FICTION. The development of the novel down to the opening of the nineteenth century. (3) MR. FAIRCHILD

162s and w. THE NOVEL. The nineteenth century novel. beginning with Jane Austen and coming down to the present. (3) MR. FAIRCHILD; MR. AINSWORTH

165s and f. THE ROMANTIC PERIOD. A study of literary tendencies and representative authors. (3) MR. TISDEL; MR. AINSWORTH; MISS LEWIS

166w. THE VICTORIAN PERIOD. A study of literary tendencies and representative authors. (3) MR. RANKIN

171f. MODERN PROSE WRITERS. Study of selected prose writers of the nineteenth and twentieth centuries who deal with important present-day problems of American life. Weekly reports and collateral reading. (3) MR. RANKIN

175f and 176w. AMERICAN LITERATURE. (a) Sectional development; (b) the growth of nationality; (c) present tendencies. (3) MR. BELDEN

178s. AMERICAN LITERATURE SINCE THE CIVIL WAR. Special attention will be paid to the literary development of the Mid-West. (3) MISS BRASHEAR

193w. RECENT AND CURRENT LITERATURE. A study of representative recent fiction and poetry in Great Britain and America, with special attention to the movement known as Regionalism. (3) MR. RAMSAY

195f. MODERN DRAMA. The development of British and American drama during the last half century, with a survey of some foreign dramatists who have influenced its course. (3) MR. RAMSAY

210s and w. PROBLEMS IN ENGLISH METHOD. Investigation of the aims, materials, and methods of English instruction in the schools. (3) MR. MOFFETT; ———

215s, f, and w. RESEARCH. Candidates for advanced degrees will meet with instructors for consultation upon their individual problems. (1-8) MR. BELDEN; MR. FAIRCHILD; MR. RAMSAY; MR. RANKIN; MR. WOOD; MR. MOFFETT; MR. GILMAN; MR. AINSWORTH

With the consent of the adviser, graduate students who have begun their research work in residence may enroll for from one to three hours' credit in the Extension Division. Work in research done in this way will be under the personal direction of a professor in the Graduate School.

235s and w. SHAKESPEAREAN CRITICISM. History of early editions and criticism; current problems. (2½-3) MR. FAIRCHILD

236s. ELIZABETHAN DRAMA. History of the early Elizabethan drama; problems in the works of Lyly, Kyd, Greene, and Marlowe; the doubtful plays of Shakespeare. (2) MR. FAIRCHILD

240f. **DONNE AND HIS SCHOOL.** A study of metaphysical poetry in the seventeenth century. (3) MR. BELDEN

253s. **SWIFT AND HIS TIME.** (2½-3) MR. WOOD

260s and f. **ENGLISH BIBLIOGRAPHY AND METHOD.** A course in methods of research and the discovery, limitation, and mode of attack on graduate problems, illustrated by recent articles and studies. (3; 2½-3 in Summer Session) MR. RAMSAY; MR. WOOD

266f. **WORDSWORTH AND HIS CONTEMPORARIES.** A study of the important poets, essayists, and novelists of the early nineteenth century (1798-1830) with special emphasis on their relation to the Romantic Movement. This course supplements 265f; Problems in Romanticism; it may be profitably elected by students who have already studied that course. (3) MR. AINSWORTH

267w. **TENNYSON AND BROWNING.** The investigation of special topics, historical and critical. (3) MR. TISDEL

280w. **THE FOREIGN DEBT OF ENGLISH LITERATURE (LYRIC POETRY).** A study of the English lyric from the beginnings to the present time, with emphasis upon the foreign influences which have demonstrably affected the content, mood, or form of lyric verse. (3) MR. RANKIN

293s. **RECENT AND CURRENT LITERATURE.** The investigation of special problems in recent fiction and poetry, with particular reference to the movement known as regionalism. (2) MR. RAMSAY

ENTOMOLOGY

115w. **VETERINARY AND MEDICAL ENTOMOLOGY.** A detailed study of those insects which are parasitic on poultry, live stock, and man. Especial attention is paid to those which transmit disease. (3) MR. HASEMAN; MR. BIRKETT

116f. **MORPHOLOGY AND DEVELOPMENT OF INSECTS.** A technical study of the embryology, growth, development, and transformation of insects. (3) MR. HASEMAN; MR. BIRKETT

117w. **ANATOMY AND PHYSIOLOGY OF INSECTS.** A technical study of external and internal anatomy and of insect physiology. (3) MR. HASEMAN; MR. BIRKETT

118s and w. **ADVANCED ECONOMIC ENTOMOLOGY.** This course includes an intensive study of the behavior, development, and control of the major insect pests. (3) MR. HASEMAN; MR. BIRKETT

120f, 121w, and 122s. **SPECIAL PROBLEMS.** Properly prepared students may take up special problems in the different fields of entomology as preparation for research. (Credit to be arranged) MR. HASEMAN; MR. BIRKETT

200f, 201w, and 202s. **RESEARCH.** Students who have had adequate training may undertake original research in economic entomology, systematic entomology, or insect morphology. A reading knowledge of French and German is essential. (Credit to be arranged) MR. HASEMAN

203f, 204w, and 205s. **SEMINARY.** Reviews of current literature and reports on original investigations are presented and discussed by the students and members of the faculty. (1) MR. HASEMAN; MR. BIRKETT

206f. **INSECT ECOLOGY.** The course covers the field of animal ecology but deals more especially with insects. A reading knowledge of French and German is essential. Open to students who have had adequate training. (3) MR. HASEMAN

104. **INSECT TAXONOMY.** A technical study of insect taxonomy. (2) MR. HASEMAN; MR. BIRKETT

EXTENSION

AGRICULTURE AND HOME ECONOMICS

101s, f, and w. FIELD WORK IN AGRICULTURAL EXTENSION. A field course occupying the full time of students for a minimum period of six weeks. Daily conferences by arrangement. (5) MR. HEARNE

110s, f, and w. FIELD WORK IN HOME ECONOMICS EXTENSION. A field course occupying the full time of students for a minimum period of six weeks. Daily conferences by arrangement. (5) MISS HEYLE

200s, f, and w. SPECIAL PROBLEMS IN AGRICULTURE AND HOME ECONOMICS EXTENSION. A problem course in methods of conducting and administering extension work in agriculture and home economics. (2-5) MR. HEARNE

FIELD CROPS

The requirement of a dissertation for the master's degree will depend upon the individual qualifications of the candidate.

100s and w. FIELD CROPS MANAGEMENT. Prerequisite, course 1. A study of crop rotations for Missouri conditions; the management of crops in various systems of farming. (2) MR. HELM

101s and w. FIELD CROPS IMPROVEMENT. A summary of the principles and practices in the economic breeding of crop plants. (3) MR. STADLER

102f. FIELD CROPS GRADING AND MARKETING. Prerequisite, course 1. An advanced laboratory course in grading grain and hay by the Federal standards. (2) MR. KIRKPATRICK

103f. FORAGE CROP PRODUCTION. Prerequisite, course 1. An advanced study of the production of the principal forage crops, based mainly on experimental data. (3) MR. KIRKPATRICK

104f. FIBER CROP PRODUCTION. Prerequisite, course 1. An advanced study of the production of the principal fiber crops with especial attention to cotton. (2) MR. ETHERIDGE

105w. GRAIN CROP PRODUCTION. A summary of the important results of investigations of factors related to the yield of each crop will be the essential aim of the course. (3) MR. ETHERIDGE

200s and w. CROP EXPERIMENTATION. A study of the methods of experimentation and research with crops in the laboratory, greenhouse, and field. (2) MR. STADLER

201f, 202w, and 203s. SPECIAL PROBLEMS. A course scheduled by appointment for graduates who wish to investigate along special lines the production of field crops. Credit to be arranged. The teacher may be elected.

202f, 203w, and 204s. RESEARCH. Original research in problems of the production, management, and improvement of field crops. MR. ETHERIDGE; MR. STADLER; MR. TASCHER

205f and 206w. SEMINARY. During the fall term, a critical study and discussion of the current literature of genetics. A reading knowledge of German is required. Credit 1 or 2 hours. During the winter term a discussion of research problems in the production, management and improvement of field crops; abstracts of literature on special topics. Required without credit of graduate students majoring in field crops. MR. ETHERIDGE; MR. STADLER; MR. TASCHER

215w. ADVANCED GENETICS. See Botany 215w.

FRENCH AND ITALIAN

FRENCH

Candidates for the master's degree who plan to major in French should have had about 24 hours' work (courses 1, 2, 3, 101, 103, 108, or their equivalent).

Candidates for the master's degree will be required to submit a dissertation. On the recommendation of the department, the dissertation may count for a fourth of the requirements toward the degree.

101w. PHONETICS. The organs of speech, sound formation, drill in pronunciation (1) MISS STEWART

102f. FRENCH CIVILIZATION. (2) MR. FESS

103f, w, and s. COMPOSITION. Prerequisite, course 3. Aural and oral drill; practice in composition. (5) MRS. HUDSON

104f and w. ADVANCED COMPOSITION. Prerequisite, course 103. More advanced work along the lines of course 103. (3) MRS. HUDSON

108f and s. MASTERPIECES OF FRENCH LITERATURE TO 1700. A study of representative writings of the French masters. It is advisable that students take this and the following course before taking others in French literature. (3) MR. JESSE

108w. MASTERPIECES OF FRENCH LITERATURE FROM 1700 TO THE PRESENT DAY. (3) MR. JESSE

112f. FRENCH NOVEL TO 1900. This course will stress the 19th century novel. (3) MISS STEWART

114f. LYRIC POETRY FROM CHENIER TO VERLAINE. (Alternates with 115.) (3) MR. TROMBLY

115f. LYRIC POETRY OF TODAY. (Alternates with 114.) (3) MR. TROMBLY

116w. HISTORY OF FRENCH LANGUAGE. An introduction to the scientific study of the language. Of special interest to teachers. (Alternates with 117.) (3) MR. FESS

117w. THE FRENCH RENAISSANCE. (Alternates with 116.) (3) MR. FESS

199w. DISTINCTION. (3)

201f and w. OLD FRENCH. Phonology, morphology, and the reading of Chanson de Roland, Chrestien de Troyes, and Marie de France. (2) MR. FESS

202w. SURVEY OF OLD FRENCH LITERATURE. (3) MR. FESS

203w. VULGAR LATIN. Appendix Probi and Peregrinatio Sanctae Silviae.

(2) MR. FESS

205w. LITERARY CRITICISM. (3) MR. TROMBLY

206w. MOLIÈRE. Reading of all the plays and especial study of some. (3) MR. TROMBLY

207s, f, and w. SEMINARY. Study of special problems.

210w. STUDIES IN MODERN LITERATURE. (2) MR. FESS

ITALIAN

120f. READINGS IN ITALIAN LITERATURE. (3) MR. TROMBLY

121w. DANTE. The Vita Nuova and the Divina Commedia. (3) MR. TROMBLY

127f. INDIVIDUAL WORK. (2) MR. TROMBLY

GEOLOGY AND GEOGRAPHY

GEOLOGY

Prerequisite for graduate study in geology: Geology, courses 1, 14, 15, 50, 100, 101, and at least 12 hours in addition, which may be selected from other courses in geology listed in the Graduate Bulletin; at least 8 hours of chemistry, one or more courses in physics, one or more courses in zoology, if the student intends to specialize

in paleontology; or in botany, if the student intends to specialize in paleobotany; a fair reading knowledge of at least one foreign language.

105s. FIELD COURSE. The area to be studied is in the Wind River Mountains of Wyoming. (6) MR. BRANSON; MR. MEHL; MR. SWARTZLOW

107w. MINERALOGY. Prerequisite, courses 1 and 14. (5) MR. TARR

120f. HISTORICAL GEOLOGY. Prerequisite, course 15. (3) MR. BRANSON

121w. INTRODUCTION TO PALEONTOLOGY. Prerequisite, courses 15 and 50.

(3) MR. WILLIAMS; MR. PECK

134f. OPTICAL MINERALOGY. Prerequisite, course 107. (3) MR. BUMGARDNER

135w. PETROGRAPHY. Prerequisite, course 134. (3-5) MR. BUMGARDNER

140s. GEOLOGIC REPORT. The selection of field data and their arrangement and expansion into a comprehensive statement of the geology of a region. (2) MR. MEHL; MR. SWARTZLOW

200w. GEOLOGY OF OIL AND GAS. Prerequisite, courses 101 and 120. (5) MR. MEHL

201f. SEDIMENTARY ROCKS AND THEIR ORIGIN. Prerequisite, course 107. Offered in 1930-31 and alternate years. (5) MR. TARR

202w. VULCANISM AND METAMORPHISM. Prerequisite, course 107; courses 134 and 135 recommended. Offered in 1930-31 and alternate years. (5) MR. TARR

204s, f, and w. SEMINARY. (1-4)

207f. ADVANCED MINERALOGY. Prerequisite, course 134. Offered in 1931-32 and alternate years. (5) MR. TARR

208w. PRINCIPLES OF ORE DEPOSITS. Prerequisite, course 107; courses 134 and 135 recommended. Offered in 1931-32 and alternate years. (5) MR. TARR

210s, f, and w. FIELD PROBLEMS. Prerequisite, course 105, and other courses, depending on the problem selected.

216w. STRUCTURAL GEOLOGY. Prerequisite, courses 105, 107, and 120. (5) MR. BUMGARDNER

224f. PALEOZOIC STRATIGRAPHY. Prerequisite, courses 120 and 121. Offered in 1931-32 and alternate years. (5) MR. BRANSON

225f. MESOZOIC AND CENOZOIC STRATIGRAPHY. Prerequisite, courses 120 and 121. Offered in 1930-31 and alternate years. (3-5) MR. BRANSON

233w. THE GEOLOGIC HISTORY OF THE VERTEBRATES. Prerequisite, courses 120 and 121. Offered in 1931-32 and alternate years. (3-5) MR. MEHL

234f. PALEONTOLOGY OF PROTOZOA, PORIFERA, COELENTERATA, BRYOZOA, AND BRACHIPODA. Prerequisite, courses 120 and 121. Offered in 1930-31 and alternate years. (5) MR. BRANSON; MR. WILLIAMS; MR. PECK

235w. MICROPALEONTOLOGY. Prerequisite, course 234. Offered in 1930-31 and alternate years. (3-5) MR. WILLIAMS

236f. PALEONTOLOGY OF MOLLUSCA, ECHINODERMATA, AND ARTHROPODA. Prerequisite, courses 120 and 121. Offered in 1931-32 and alternate years. (3-5) MR. BRANSON; MR. WILLIAMS

240s, f, and w. RESEARCH

GEOGRAPHY

Prerequisite for graduate study in Geography: Geography, courses 6, 70, 110 or 112; Geology, courses 1, 100 or 101; at least 5 hours of economics, 5 hours of history, 5 hours of botany (preferred) or zoology, and a reading knowledge of at least one foreign language.

118w. CONSERVATION OF NATURAL RESOURCES OF THE UNITED STATES. Prerequisite, 50 hours of college credit. Offered in 1930-31 and alternate years. (3) MR. BRATTON

125f and w. ADVANCED ECONOMIC GEOGRAPHY. (3) MR. ADAMS

150w. GEOGRAPHY OF ASIA. Prerequisite, course 110 or 112. (3) MR. FAHRNER

160w. GEOGRAPHY OF SOUTH AMERICA. Prerequisite, course 110 or 112. (3)

MR. ADAMS

170f. GEOGRAPHY OF CARIBBEAN AMERICA. Prerequisite, course 110 or 112.

(3) MR. BRATTON

180w. CLIMATOLOGY. Prerequisite, at least 15 hours of geography. Offered in 1931-32 and alternate years. (3) MR. BRATTON

190s, f, and w. GEOGRAPHIC PROBLEMS. Prerequisite, at least 15 hours of geography. (1-3) MR. ADAMS; MR. FAHRNER

220f. GEOGRAPHY OF PLANTS. Offered in 1931-32 and alternate years. (3-5)

MR. BRATTON

250s, f, and w. FIELD PROBLEMS. (1-6) MR. BRATTON; MR. ADAMS; MR. FAHRNER

255s, f and w. FIELD PROBLEM REPORT. (2) MR. BRATTON; MR. ADAMS; MR. FAHRNER

260w. POLITICAL GEOGRAPHY. Offered in 1930-31 and alternate years. (3)

MR. BRATTON

270f. CARTOGRAPHY. Offered in 1932-33 and alternate years. (2-3) MR. BRATTON

TON

280s, f, and w. SEMINARY. (2-5) MR. BRATTON; MR. ADAMS; MR. FAHRNER

290s, f, and w. RESEARCH. (2-5) MR. BRATTON; MR. ADAMS; MR. FAHRNER

GERMANIC LANGUAGES

Prerequisite for graduate study: Those wishing to specialize in Germanic Languages should consult the chairman of the department. The prerequisites for successful advanced study are, in a large way, a facile use of modern German. Courses 1, 2, 3, are planned with this end in view.

104s, f, and w. MASTERPIECES IN MODERN GERMAN DRAMA, LYRICS, AND NOVEL. Intensive study, from the literary and cultural side, of a number of carefully chosen modern German dramas, lyric poems, and novels. Parallel reading and reports. (3) MR. ALMSTEDT

105f. OUTLINE COURSE IN GERMAN LITERATURE. The aim of the course is to acquaint the student with the most important works and movements in the evolution of German literary life. (3) MR. PALMER

106w. LESSING. Lectures on Lessing's life and works; intensive study of Lessing, the dramatist and the critic. (3) MR. PALMER

107s, f, and 108w. SCHILLER. Lectures on Schiller's life and works; intensive study of Schiller's drama and poetry. (3) MR. PALMER

109s and f and 110w. GOETHE. Lectures on Goethe's life and works; intensive study of Goethe's poetry and dramas. (3) MR. ALMSTEDT

111w. OUTLINE COURSE IN HISTORICAL GRAMMAR. This course, together with course 105, is arranged to meet the needs of the prospective teacher of German. Though a knowledge of the older periods is desirable, it is not required. (3) MR. ALMSTEDT

112s, f, and w. ADVANCED COMPOSITION AND CONVERSATION. Advanced course in German theme-writing; discussion of grammatical, syntactical and stylistic points. This course is intended for teachers of German or for students who purpose to become teachers of German; conducted in German. (2) MISS NAGEL

113s and w. GERMAN DRAMA OF THE NINETEENTH CENTURY. (3) MR. ALMSTEDT

213f. ROMANTICISM. This course is intended to comprise a study of German romanticists and their work and to show the relation of this movement to similar ones in other literature. (3) MR. PALMER

214s. MIDDLE HIGH GERMAN. Introductory course. (3) MR. ALMSTEDT

215w. WALTHER VON DER VOGELWEIDE. A continuation of the introductory Middle High German course; an intensive study of W. v. d. V. on the background of the historical and cultural conditions of the Hohenstaufen Period. (3) MR. ALMSTEDT

216f. THE REFORMATION AND RENAISSANCE (1500-1700). (3) MR. PALMER

217w. OLD HIGH GERMAN. (3) MR. ALMSTEDT

218s and w. GOTHIC. Phonology, morphology, and syntax; reading from Ulfilas; the relationship of Gothic to Indo-European and to later German dialects; general introduction to the study of German Philology. (3) MR. ALMSTEDT

219s, f, and w. SEMINARY. Subject to be determined. Admission by the director.

Other courses in Germanic languages, in Middle and Old High German, Old Norse, Old Saxon, The Reformation, The Nineteenth Century, will be arranged if the needs of the student require.

GREEK

See under CLASSICAL LANGUAGES AND ARCHAEOLOGY.

HISTORY

Prerequisite for graduate work in history. The normal preparatory work of college grade for a graduate major in history consists of ten hours of work (in addition to the introductory courses or their equivalents) in any one of the following fields: Ancient and Medieval, Modern European, English or American History; in addition, ten hours of history outside this major field; the basic courses in at least two of the allied fields of economics, political science, and sociology. As a minimum, students may be admitted on probation to graduate work in history with ten hours of upperclass work in history and the basic courses in two of the other social studies. But the Department reserves the right to require that the deficiencies in normal preparation for graduate work be made up, in addition to the regular requirements for a graduate degree. Students with the minimum preparation will require at least two regular sessions and a summer session or the equivalent, to complete the requirements for the A. M. The department strongly urges students planning to major in history to acquire a reading knowledge of French and German (one of them is an absolute prerequisite to work in Modern European History) and in addition, if planning to major in ancient history, of Greek or Latin.

A dissertation will be required for the master's degree.

MINOR IN HISTORY

The following courses may be counted toward a minor in History; they may not be counted for a major:

106s, f, and w. CONTEMPORARY EUROPE. A survey of European History in the nineteenth and twentieth centuries, dealing with political and economic developments and the insistent problems of world politics. Special emphasis will be given to the causes of the World War and its results. (2-3) MR. COCHRAN

110s, f, and w. RECENT UNITED STATES HISTORY. A study of the United States since 1876 as an historical background to present day problems. (2-3) MR. ELLIS

MAJOR IN HISTORY

The following courses may be counted toward a major or minor in history:

124s and w. GREEK HISTORY. A study of the political and social institutions and the intellectual life of the Greek city-states to the time of Alexander. (2-3) MR. BRADY

125f. THE ROMAN REPUBLIC. A study of the origin and development of Roman institutions. The history of Rome's expansion and cultural development to the Principate of Augustus will be studied. (2) MR. BRADY

128f. THE HELLENISTIC AGE. This course deals with the history of the Greek World from Alexander to the death of Cleopatra. (2) Alternate years. Given in 1931-32. MR. BRADY

129w. THE ROMAN EMPIRE. A history of the Roman World and its institutions and culture through the reign of Constantine. (3) MR. BRADY

132f. THE BYZANTINE EMPIRE. A study of the institutions, culture, and foreign contacts of the Byzantine Empire. (2) Alternate years. Given in 1931-32. MR. WRENCH

134w. THE FAR EAST. The historical background of the present political and economic problems of the Far East. Alternate years. Given in 1932-33. (3) MR. COCHRAN

139f. HISTORY OF ISLAM. The institutions and culture of the Moslem world to the Mongol conquest. (2) Alternate years. Given in 1932-33. MR. WRENCH

146s and w. THE BRITISH EMPIRE. A survey of its growth and organization and of the relations of the colonies and dependencies to the mother country. (2-3) MR. MULLETT

150f. INTELLECTUAL HISTORY. A survey of the predominant ideas of the intellectual classes in the realms of religion, science, and social philosophy in ancient and medieval times as determining factors in historical development. (3) MR. MULLETT

151w. INTELLECTUAL HISTORY. Continuation of 150f in modern times. (3) MR. MULLETT

152s and f. MEDIEVAL SOCIAL AND ECONOMIC HISTORY. A study of the development of social and economic institutions from the fifth to the fourteenth centuries (2-3) MR. WRENCH

154w. EUROPEAN CULTURE; MEDIEVAL PERIOD. A survey of European culture from 500 to 1300 A. D. Prerequisite, 152f. (3) MR. WRENCH

157w. MEDIEVAL FRANCE. A study of French history, institutions and influence from 987 to 1350. (2) MR. WRENCH

162s and w. FRENCH REVOLUTION AND NAPOLEON. Chief emphasis will be placed upon the social and intellectual background and the transitional aspects of the period. (2-3) Alternate years. Given in 1931-32.

166s and f. MODERN GERMANY. The origins and development of the institutions and ideas of the German Empire and the Republic. (2-3) MR. COCHRAN

167w. ECONOMIC HISTORY OF EUROPE SINCE 1760. The changes in agriculture and manufacturing and their effect on capital, labor, and governmental policies, external and internal. (3) MR. COCHRAN

168f. DIPLOMATIC HISTORY OF EUROPE, 1871-1930. The policies of the Great Powers and the Alliances in the imperialistic period in relation to social, economic, political, and military conditions of the time. (3) MR. COCHRAN

171f. TUDOR AND STUART ENGLAND. A comprehensive treatment of the period 1485-1688, which saw the rise of the middle class, the evolution of parliamentary

sovereignty, the separation from the Roman Church, and the beginning of overseas expansion. (3) MR. MULLETT

172w. EIGHTEENTH CENTURY ENGLAND (1688-1832) Attention is directed to the evolution of cabinet government, the beginnings of the machine age, and the influence of the French Revolution and of Expansion. (3) MR. MULLETT

173f. ENGLAND SINCE 1832. Emphasis is placed upon the development of the party system, the expansion of industrialism, and the breakdown of laizzez-faire. (3) MR. MULLETT

180f. SOCIAL FORCES IN AMERICAN HISTORY. The origins and development of American social and economic conditions, colonial and national. (3) MRS. PRIDDY

181f. AMERICAN COLONIAL HISTORY. A study of colonial institutions as the background for the American Revolution. (3) MRS. TRENHOLME

182s and f. HISTORY OF THE WEST TO 1840. A study of the frontier in American history; its development and its influence on American ideals and politics. (2-3) MR. VILES

183w. HISTORY OF THE WEST SINCE 1840. The West and slavery and the Civil War; the development of the Far West; agrarian movements; end of the frontier. (3) MR. VILES

184f. HISTORY OF THE SOUTH. The Old South and the New. (3) MRS. TRENHOLME

185w. THE AMERICAN REVOLUTION. A study of the break with England and the establishment of the national government. (3) MRS. TRENHOLME

186f. THE MIDDLE PERIOD IN AMERICAN HISTORY. (3) MR. ELLIS

187w. HISTORY OF HISPANIC AMERICA. The extension of Spanish culture into the new world and the resultant republics. (3) MRS. PRIDDY

190s and f. AMERICAN DIPLOMATIC HISTORY. A survey of the foreign relations of the United States. (2-3) MR. STEPHENS

200s and f. HISTORICAL BIBLIOGRAPHY AND METHODS. A general introduction to the advanced study of history and other social sciences, including a survey of bibliographical aids and an examination of the methods of historical research. Lectures and practical exercises. Required of all graduate students in history and recommended to graduate students in the other social sciences. (2) MR. WRENCH

201s and w. HISTORICAL INTERPRETATION. The nature and content of History and its relations to the other social studies. (2) MR. VILES

205w. THE HISTORY OF ROMAN LAW. A study of the development of Roman Law as an institution from the early times up to the modern codes. The primary emphasis will be placed upon the historical aspects of Roman Law and its persistence as a political and social instrument in Western European development. (2) MR. BRADY

206f. THE ROMAN CONSTITUTION. A study of the development of the Roman public law through the constitution of the Empire. (2-3) Alternate years. Given in 1931-32. MR. BRADY

207s and f. GREEK POLITICAL INSTITUTIONS. A study of the legal and constitutional history of Athens with frequent reference to the laws and customs of other Greek states. (2-3) Alternate years. Given in 1932-33. MR. BRADY

208w. SEMINARY IN MEDIEVAL PROBLEMS (1-3) MR. WRENCH

209w. ENGLISH LEGAL AND CONSTITUTIONAL HISTORY. Emphasis is directed toward an appreciation of the foundation of English Law and the Constitution. (3) MR. MULLETT

210w. AMERICAN CONSTITUTIONAL HISTORY. Especial attention is directed to the formation of the Federal Constitution and its interpretation in connection with the leading constitutional issues. (3) MR. VILES

211s and w. RECENT DIPLOMATIC PROBLEMS. Selected topics in the foreign relations of the United States since 1895. (2) MR. STEPHENS

212w. THE ANTE-BELLUM SOUTH. An interpretation of the plantation regime. (2-4) MRS. TRENHOLME

213w. SEMINARY AND READINGS IN RECENT UNITED STATES HISTORY. Individualized work of a research or critical nature organized about selected problems in the field. (2-4) MR. ELLIS....

215f. SEMINARY IN THE HISTORY OF THE WEST. (2) MR. VILES

216s, f, and w. SEMINARY IN CONTEMPORARY EUROPE. Selected topics in the history of Europe and world politics. (2) MR. COCHRAN

217f. SEMINARY IN ENGLISH HISTORY. (2) MR. MULLETT

250s, f, and w. RESEARCH AND THESIS. (1-8) THE DEPARTMENT

HOME ECONOMICS

The Home Economics Department offers graduate work in the following specialized lines: food economics and preparation, nutrition, textiles and clothing, home management, and home economics education.

For Home Economics Education courses, see page 38.

For students who take a major in the various fields of home economics the following courses are undergraduate prerequisites:

1. Major in Textiles and Clothing: the equivalent of the science, art, economics, sociology, clothing, and textiles required in the undergraduate course for training teachers.
2. Major in Nutrition or Food Preparation: the equivalent of the science, foods, nutrition, and dietetics required in the undergraduate course for training teachers.
3. Major in Home Management: the equivalent of the science, art, economics, psychology, sociology, and home economics subjects required in the undergraduate course for training teachers.
4. Major in Home Economics Education: the equivalent of the four-year undergraduate course for training teachers.

The following courses may be counted toward a minor in Home Economics: they may not be counted for a major:

101f and w. HOME SANITATION. Prerequisite, bacteriology. Preventive medicine may be substituted for bacteriology by Arts and Science students. A study of the problems involved in providing sanitary living conditions. (2) MISS WHIPPLE; MISS CLINE

110f and w. HOME PLANNING AND FURNISHING. Prerequisite, home economics 15 and 16, or Introduction to Art. A study of the planning and furnishing of the home from the standpoint of art. (3) MISS SCHELL

115s, f, and w. HOME MANAGEMENT. A course dealing with the problems arising in the management of a home. Opportunity is provided, through residence in a self-sustaining home, for developing judgment in the solution of typical problems. (4) MRS. GRACE

120s, f, and w. FOOD ECONOMICS. Prerequisite, home economics 1 or its equivalent, and bacteriology (preventive medicine may be substituted for bacteriology by Arts and Science students). A study of the purchase of food, food preservation, care of food in the home and planning and serving meals for different occasions. (3) MISS CAMPBELL; MISS WHIPPLE

121s, f, and w. NUTRITION. Prerequisite, organic chemistry, physiology, home

economics 1. A study of food constituents, their occurrence in the different foods and their digestibility. (4) MISS WHIPPLE

122f and w. DIETETICS. Prerequisite, home economics 121. A study of the normal food requirements, considering the individual and his environment; the planning of dietaries, including infant feeding. (3) MISS HESSLER

145f and w. DRESS DESIGN. Prerequisite, course 16. A study of the principles of design and color theory applied to dress, line, texture, and color requirements for the individual. (2) MISS BERESFORD

150f and w. CLOTHING ECONOMICS. Prerequisite, courses 51 and 145. A study of the selection, construction, and care of clothing for the infant, child, and adult from the hygienic, aesthetic and economic standpoints. (5) MISS COLE

160s, f, and w. HOME CARE AND TRAINING OF CHILDREN. A study of problems arising in the normal physical, mental, and social development of children. (3) MRS. GRACE

The following courses may be counted toward a major or minor in home economics:

111s and w. PROBLEMS IN HOME PLANNING AND FURNISHING. Prerequisite, home economics 10. A study of the history of home furnishings—their origin, development, and influence on modern interior decoration, with their suitable applications to the problems. (3) MISS SCHELL

116f, w, and s. PROBLEMS OF CONSUMER BUYING. Prerequisite, 24 hours in Home Economics. Includes fundamental subject matter underlying consumer buying, general guides to market selection, difficulties involved in consumer buying, advantages and disadvantages of different types of retail agencies, methods of consumer financing, methods of improving consumer buying. (3) MISS COLE

117f and w. ECONOMIC PROBLEMS OF THE HOUSEHOLD. Prerequisite, 5 hours in General Economics and 24 hours in Home Economics. A study of economic problems of the family including the size, sources and factors determining family incomes, spending of the income, household expenditures, changes in economic phases of family life, the economic character of household production, and the economic contributions of women in home making. (3) MISS COLE

123w. ADVANCED DIETETICS. Prerequisite, home economics 122. Advanced problems in normal dietetics and the application of the principles of normal dietetics to diet in disease. (3) MISS HESSLER

124w. FIELD WORK IN DIETETICS. Prerequisite, home economics 123. Individual work, such as problems in child nutrition, institutional or clinical dietetics. (Credit to be arranged.) MISS WHIPPLE

146s and f. ADVANCED DRESS DESIGN. Prerequisite, home economics 145. Continuation of home economics 145. Planned especially for students who wish to specialize in dress design. (2) MISS BERESFORD

152w. ADVANCED CLOTHING. Prerequisite, home economics 145 and 150. Special application of the principles of art, with original designs carried out in clothing construction. (3) MISS BERESFORD

155s and f. ADVANCED TEXTILES. Prerequisite, home economics 150 and organic chemistry. Analysis of the physical and chemical characteristics of the textile fibers; methods of testing textile materials; history of textile industry and economic studies of the present problems in the textile and clothing industries. (3) MRS. GINTER

170f. EXPERIMENTAL COOKERY. Prerequisite, home economics 120 and 121. This course involves elementary research in the science of food preparation under controlled conditions. (2) MISS CLINE

200s, f, and w. HOME ECONOMICS SEMINARY. The most recent work in various lines of home economics will be reviewed and discussed. (2) MISS HESSLER; MRS. GINTER; MISS CLINE

202s and f. METABOLISM. Prerequisite, home economics 122 and chemistry 25, preceding or parallel. A study of metabolism through urinalysis, calorimetry, and feeding experiments. (5) MISS WHIPPLE

205s, f, and w. RESEARCH IN FOOD PREPARATION. Prerequisite, home economics 121 and 170 and chemistry 25 or equivalent. Special problems in food preparation investigated. A knowledge of French and German is desirable. (Credit to be arranged.) MISS CLINE

210f and w. RESEARCH IN HOUSE FURNISHING. Prerequisite, home economics 110 and 111. (Credit to be arranged.) MISS SCHELL

215f and w. SPECIAL PROBLEMS IN HOME MANAGEMENT. An advanced course planned for those having special preparation in Home Management. The content of the course may include preparation for supervision of home management and investigation of certain phases of the work. (Credit to be arranged.) MRS. GRACE; MISS CAMPBELL

221s, f, and w. PROBLEMS IN NUTRITION. Prerequisite, home economics 122. An extensive study will be made of special problems of interest in nutrition. (Credit to be arranged.) MISS HESSLER

245w. SPECIAL PROBLEMS IN DRESS DESIGN. Prerequisite, home economics 146. (Credit to be arranged.) MISS SCHELL

250s, f, and w. RESEARCH IN CLOTHING. Prerequisite or parallel, home economics 152 and 155. (Credit to be arranged.) MRS. GINTER

METHODS IN HOME ECONOMICS

See under EDUCATION, p. 30.

HORTICULTURE

Prerequisites for graduate work: Graduate students majoring in Horticulture must have had, in addition to requirements for B. S. degree in Agriculture (including Botany 101w and Horticulture 115w) 19 hours of electives in Horticulture, Botany 102f (3) and Entomology 2f or w (3), or the equivalent from another institution.

100s and f. GENERAL POMOLOGY. Prerequisite, course 1. A course dealing with the establishment and maintenance of orchards. Lectures, assigned readings, and laboratory work. (3) MR. TALBERT

101w. GENERAL POMOLOGY. Prerequisite, course 1. A continuation of course, 100, dealing especially with the subjects of pruning, fertilizing, and spraying orchards. (3) MR. TALBERT

105f. SYSTEMATIC POMOLOGY. A study of classification and nomenclature, with laboratory work in description, identification, and judging of fruit. Lectures laboratory work, and assigned reading. (3) MR. SWARTWOUT

106f. COMMERCIAL VEGETABLE GROWING. The use of irrigation, fertilizers, spraying equipment and forcing structures in their relation to vegetable growing, with discussions on seed growing, truck-farm management, and methods of marketing vegetables. Three lectures and assigned readings. (3) MR. QUINN

112w. ADVANCED LANDSCAPE DESIGN. Prerequisite undergraduate work in landscape gardening. Principles of landscape design, with tracings and original designs in home, school, church, cemetery and railroad gardening. (3) MR. MAJOR

113w. SPRAYING. A study of spray materials, spray machinery and results. Lectures, laboratory work and assigned readings. (3) MR. SWARTWOUT

114f. COMMERCIAL POMOLOGY. The harvesting, grading, packing, storage, and marketing of fruits. Lectures, assigned reading, and laboratory exercises. (3) MR. MURNEEK

115w. EVOLUTION OF HORTICULTURAL PLANTS. A study of the fundamental laws of genetics, as applied to evolution and breeding of horticultural plants. Lectures, assigned reading, and problems. (3) MR. MURNEEK

116s, f, and w. SPECIAL PROBLEMS. Topics in landscape gardening, pomology, forestry, vegetable gardening, and floriculture. Hours by appointment. MR. TALBERT; MR. MURNEEK; MR. SWARTWOUT; MR. QUINN; MR. VINSON

119w. VEGETABLE FORCING. Types and equipment of forcing structures with discussions on crops. Two lectures and one laboratory period. (3) MR. QUINN

125w. FARM FORESTRY. Identification of trees and woods; windbreaks, shelter belts, woodlots; creosoting fence-posts; collecting and storing tree seeds; nursery practice including seed bed methods, transplanting and field planting as applied to Missouri conditions. (3) MR. TALBERT; MR. MAJOR

133w. SMALL-FRUIT CULTURE. (3) MR. SWARTWOUT. Not offered in 1931-32.

200s, f, and w. SPECIAL INVESTIGATIONS. Hours by appointment. MR. TALBERT; MR. MAJOR; MR. MURNEEK; MR. SWARTWOUT; MR. QUINN; MR. VINSON

203w. CHEMISTRY AND PHYSICS OF SPRAYING. Prerequisite, course 113w. A study of the composition, toxicity, compatibility, deterioration, spreading, and adhesion of spray materials. (3) MR. SWARTWOUT

204w and s. BREEDING OF HORTICULTURAL PLANTS. Prerequisite, course 115w or equivalent. Study of literature and original investigation on breeding and selection of horticultural plants. Hours by appointment. MR. MURNEEK

206w. FORCING PROBLEMS WITH TRUCK CROPS. A study of such problems as soil sterilization, temperature and humidity, training, pruning, pollination, and the use of fertilizers. (3) MR. QUINN

207s and f. SYSTEMATIC OLERICULTURE. A systematic study of the classification and nomenclature of vegetables. Description of varieties and their adaptation to different environmental conditions. (3) MR. QUINN

208s and w. NUTRITION. A detailed study of the important nutrient elements, their absorption and utilization; of the manufacture and utilization of carbohydrates; and of fertilizer treatments with reference to horticultural plants. (3) MR. VINSON; MR. MURNEEK; MR. TALBERT

210f. METHODS OF HORTICULTURAL RESEARCH. A study of methods of procedure in work of investigation—outlining problems, assembling and analyzing data, and presenting results. (3) MR. MURNEEK; MR. VINSON

212s and w. PRUNING PROBLEMS. Prerequisite, course 100 or equivalent. The fundamental principles of pruning and its physiological effect upon deciduous fruit trees. Laboratory, assigned readings, and problems. (3) MR. TALBERT

215f and w. SEMINARY. A critical study of recent investigations in horticulture and of investigations in other fields as they relate to horticulture. (1) MR. TALBERT; MR. MURNEEK; MR. VINSON; MR. SWARTWOUT; MR. QUINN

210s and f. ROOT STOCK FOR DECIDUOUS FRUIT TREES AND VINES. Suitable stocks for apples, pears, and grapes. Propagation of apples and pears upon their own roots by means of whole roots and crown grafts. Native grapes as stocks for the best commercial varieties. (Credit to be arranged.) MR. TALBERT

221s and f. MORPHOLOGY OF HORTICULTURAL PLANTS. Prerequisite, Botany 1. A detailed study of morphology and histological structure of horticultural plants of economic importance. (Credit to be arranged.) MR. MURNEEK

JOURNALISM

A few courses for students from other divisions of the University are offered without journalistic prerequisites. These carry graduate credit, but do not count toward a major in journalism. They are:

170f. **THE AGRICULTURAL PRESS.** Writing for and editing agricultural publications. For students who expect to become farm journal contributors, county agents, teachers, extension workers, or farm managers. (3) **MR. GERALD**

181s. **THE SCHOOL NEWSPAPER AND ANNUAL.** Primarily for high school teachers in charge of student publications. Available sources of material, construction of the news story, headlines, illustrations, make-up, editorial problems. **MISS ANDERSON**

MAJOR IN JOURNALISM

Graduate students majoring in journalism must have had at least the equivalent of the professional courses required of candidates for the degree of Bachelor of Journalism. (A degree in journalism from any institution holding membership in the Association of American Schools and Departments of Journalism will be recognized without question as meeting this requirement.)

These prerequisite courses are: History and Principles of Journalism, The News, Reporting, Copy Reading, and Advertising Principles and Practice. An additional prerequisite for advanced advertising courses is Writing of Advertising, and Advertising Layout. None of these prerequisite courses carries graduate credit. More detailed information about them may be found in the Journalism Announcement.

Candidates for the master's degree in journalism are required to take two semesters of course 201, Research in Journalism, or course 221, Research in Advertising. In this course a thesis must be written, showing capacity for original research and independent thought.

Approximately half of the student's graduate study should be in professional courses, and the other half in academic subjects related to journalism.

The following courses may be counted toward a major (or minor) in journalism:

105s, f, and w. **REPORTING III.** Advanced reporting on daily newspaper. (3-5) **MR. MORELOCK; MR. WHITAKER**

112s, f, and w. **COPY READING III.** Advanced copy reading on a daily newspaper with study of news valuation. Enrollment by special permission only. (3) **MR. ELLARD**

125f. **ADVERTISING AND DISTRIBUTION.** The mechanism and operation of markets studied in relation to effect on distribution of advertised commodities and services. (2) **MR. JOHNSTON**

126w. **ADVERTISING CAMPAIGNS.** Planning and presenting national and local campaigns with special reference to a practical investigation of a product or service. (2) **MR. JOHNSTON**

127f. **RETAIL STORE ADVERTISING.** Analyzing, from the advertising standpoint, the retail selling and store management problems encountered in the local field. (2) **MR. JOHNSTON**

128w. **DIRECT-MAIL ADVERTISING.** Practice writing to a selected audience through all forms of direct media, and a consideration of the physical make-up of each medium. (2) **MR. JOHNSTON**

129s and f. **ADVERTISING PROBLEMS.** Analysis and solution by the case method of a wide variety of advertising and distribution problems from the approach of the business executive. (2) **MR. JOHNSTON**

130w. PROMOTIONAL ADVERTISING. The scope and possibilities of modern methods of promoting advertising for civic, co-operative, public, institutional, and business organizations. Case method used. (2) MR. JOHNSTON

141s, f, and w. THE EDITORIAL. Practice in writing editorials for publication in daily newspaper, and discussion of editorial problems. (3) MR. ELLARD

145f and w. NEWSPAPER MAKING. Special laboratory instruction for advanced students. (1-3) MR. MARTIN; MR. JOHNSTON; MR. MORELOCK; MISS GRINSTEAD; MR. ELLARD

160s, f, and w. FEATURE WRITING. Writing of feature articles. (3) MISS GRINSTEAD

162s, f, and w. LITERARY AND DRAMATIC REVIEWING. Critical study of modern books and drama; study of newspapers and magazines devoted entirely or in part to this type of journalism; preparation of book-reviewing sections of weekly magazine. (3) MISS GRINSTEAD

163s, f, and w. NEWSPAPER AND MAGAZINE DEPARTMENTS. Writing for and editing of special pages or departments. (3) MISS GRINSTEAD

174f and w. COUNTRY NEWSPAPER PRODUCTION. Laboratory course in which the students prepare all news and editorial matter for a weekly newspaper. (5) MR. GERALD

182s. ADVERTISING PROMOTION IN SCHOOL PUBLICATIONS. For high school and college teachers in charge of student publications. Writing and selling of advertising in such publications, with special attention to problems of student solicitors. No journalistic prerequisites. (1) MR. KELLER

183s. NEWS WRITING AND EDITING FOR TEACHERS. A laboratory and lecture course in which the students produce a weekly newspaper containing news of local school activities. No journalistic prerequisites. (2) MISS ANDERSON

201s, f, and w. RESEARCH IN JOURNALISM. Thesis course. (1-6) MR. MARTIN; MR. ELLARD; MR. MORELOCK; MISS GRINSTEAD

202f and w. NEWSPAPER ADMINISTRATION. Conduct of newspapers from the editorial point of view. MR. MARTIN

203s. SPECIAL CORRESPONDENCE. Field trip, including the writing of daily articles for newspapers. Details of each year's trip available about May. (8) MR. MARTIN; MR. ELLARD

205f and w. COPY-DESK METHODS. The handling of copy; advanced headline writing principles of headline display. (3) MR. ELLARD

206s, f, and w. NEWS-DESK METHODS. The handling of assignments and futures; the direction of reporters. (3) MR. MORELOCK

207w. COMPARATIVE JOURNALISM. Study of foreign and American newspapers. (3) MR. MARTIN

211s, f, and w. THE SPECIAL ARTICLE. Writing of special articles for newspapers, Syndicates and magazine. (3) MISS GRINSTEAD

220f and w. ADVERTISING SEMINARY. A discussion of graduate problems, including a survey of bibliographical methods and aids in research. Required of all students majoring in advertising. MR. JOHNSTON; MR. BELL; MR. KELLER; MR. LATHROP

221s, f, and w. RESEARCH IN ADVERTISING. A concentrated study of special research problems, methods, organization, and objectives of the retail or national advertiser. Thesis course. (1-6) MR. JOHNSTON

222s, f, and w. ADVERTISING-DESK METHODS. Equipment and methods of the advertising office; direction of solicitors; selling procedure and publication contact. (2) MR. KELLER; MR. BELL

LATIN

See under CLASSICAL LANGUAGES AND ARCHAEOLOGY.

MATHEMATICS

An undergraduate major of twenty-four hours in Mathematics or equivalent training is prerequisite to taking work in Mathematics for graduate credit with mathematics as the major subject. This shall include courses 104 and 105 or 110 and 111. These two sequences of courses in Advanced Algebra and in Advanced Calculus must precede or accompany all courses above 200.

Courses 210 and 215, 220 and 225, 230 and 231, 260 and 261 may be elected repeatedly in different semesters for credit as the topics covered in each of these courses will be varied from term to term to fit the needs of the student.

A dissertation will not be required for the master's degree, but the candidate may offer an acceptable dissertation in lieu of not to exceed eight hours' work in course on the advice of his adviser and with the consent of the dean.

100s, f, and w. INTEGRAL CALCULUS. This course is the natural continuation of course 5, which is a prerequisite for this course. No graduate credit for students specializing in mathematics. (5)

104s and f, 105s and w. ADVANCED ALGEBRA. Prerequisite, course 100. (3)
MR. WAHLIN

110f and s and 111w and s. ADVANCED CALCULUS. Prerequisite, course 100.
(3) MR. WESTFALL

200s, f, and w. SEMINARY. The members of the staff will conduct work in reading and research in private with students prepared for such work. The nature and amount of the work done may vary materially. The course may be elected repeatedly in different semesters.

210s and f and 215w and s. SELECTED TOPICS FROM GEOMETRY. The topic treated in any term will be selected from the following: (a) differential geometry; (b) the invariants of space; (c) projective geometry; (d) Riemannian Geometry; (e) Non-Riemannian Geometry. (3) MR. INGOLD

220f and s and 225w and s. SELECTED TOPICS FROM MATHEMATICAL PHYSICS.
(3) MR. INGOLD

230s and f and 231w and s. SELECTED TOPICS FROM ANALYSIS. The topic treated in any term will be selected from the following: (a) number of sets and point sets; (b) real variables; (c) complex variables; (d) infinite processes; (e) extremes; (f) special functions; (g) integral equations. (3) MR. WESTFALL

260f and s and 261s and w. SELECTED TOPICS FROM ALGEBRA. The topic treated in any term will be selected from the following: (a) number theory; (b) group theory; (c) Galois theory; (d) linear algebra; (e) quadratic forms. (3) MR. WAHLIN

The following courses are offered from time to time but not necessarily every year:

120f and 125w. DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS. (3)

128w. HISTORY OF MATHEMATICS. Must be preceded or accompanied by course 5 or its equivalent. (3)

MATHEMATICAL CLUB. The members of the staff of the department hold regular meetings for the discussion of current literature and of recent research, which are open also to qualified graduate students.

MECHANICAL ENGINEERING

221f and w. SPECIAL MECHANICAL LABORATORY. Advanced work in experimental engineering research. Credit to be arranged. Offered by members of the staff in their respective lines.

231w. APPLIED THERMODYNAMICS. Prerequisite, heat machinery B. The advanced theory and practice of heat transformations and appliances related to commercial economy in heat machinery. (3) MR. WHARTON

234f and 235w. GAS ENGINEERING. Prerequisite, machine design B, heat machinery B. Production, preparation, transmission, and utilization of industrial gases; together with the theory and practice of internal-combustion motors. (2) MR. NEWTON

251w. REFRIGERATION, B. Prerequisite, refrigeration A. Designs, plans, specifications, estimates for one or more selected studies, as: ice factory, cold-storage, district refrigeration, nursery market. Research, tests, improvements, appraisals, sales, management. (Credit to be arranged.) MR. WHARTON

261f, 262w. RAILROAD MECHANICAL ENGINEERING. (2)

MECHANICS

112f and 113w. ADVANCED MECHANICS. Problems in dynamics. (3) MR. DEFOE

205f and 206w. ELASTICITY. Mathematical theory of elasticity. (3) MR. DEFOE

209f and 210w. HYDRODYNAMICS. Material theory of the motion of fluids. (2) MR. DEFOE

MUSIC

Prerequisites for graduate work in music: The minimum preparatory work for a graduate major in music consists of twenty-four hours of courses in theoretical and historical music, as well as sufficient skill in some form of applied music (approximately fourteen hours) to meet the needs of graduate music study. If the major is to be in the field of historical music, ten hours of general history are required as well as a reading knowledge of French or German.

A master's dissertation will be required in the field of music history, or a composition may be offered in one of the larger music forms for orchestra, for soloists, chorus and orchestra, or for one of the chamber music combinations evidencing mastery in the technic of musical composition. Credit of from four to eight hours may be granted upon recommendation of department toward the master's degree for such a thesis.

MINOR IN MUSIC

The following courses may be counted toward a minor in music:

101f and 102w. COUNTERPOINT. A course in the principles of melodic construction and combination, including the consideration of strict counterpoint in two, three, four, and five parts in all species; double, triple and quadruple counterpoint, and the modern two and three part invention. Prerequisite, courses 2 and 6 or the equivalent. (3) MR. GOLDTHWAITE

111f and 112w. MUSICAL FORM. The construction of the phrase, the period, two-part and three-part primary forms, extensions, elisions, coda, the chain-phrase, the transition, and other elementary factors of musical structure. Prerequisite, courses 2 and 6, or the equivalent. (2) MR. QUARLES

113f and 114w. MUSICAL ANALYSIS. The analysis of the construction of works in the various musical forms affording an intelligent basis for musical interpretation. (2) MR. GOLDTHWAITE

MAJOR IN MUSIC

The following courses may be counted toward a major or a minor in music.
103f and 104w. POLYPHONIC FORMS. Imitation and the polyphonic treatment of

chorale melodies, including the construction of the chorale-preludes and variations; the fugue in three and four voices; the canon; the chaconne and passacaglia. Prerequisite, course 102 or its equivalent. (2) MR. GOLDTHWAITE

115f and 116w. COMPOSITION. A practical application of the principles of musical form in works of large mold including the rondo and the sonata form, as well as modern derivatives therefrom. Prerequisite, courses 102 and 112. (2) MR. GOLDTHWAITE

118w. INSTRUMENTATION. A course dealing with the capacities of the different instruments of the orchestra, singly and in simple combinations. Prerequisite, course 110. (2) MR. VENABLE

123f and 124w. HISTORY OF MUSIC. A lecture course, with collateral reading on the historical development of music. Emphasis is placed on the relation that exists between the progress of civilization and the development of music. Prerequisite, the course in Appreciation of Music or its equivalent. (3) MR. GOLDTHWAITE

203f and 204w. ADVANCED FUGUE AND CHORAL COMPOSITION. The creation of works for soloists and chorus, with orchestral accompaniment. Prerequisite, courses 216, 115, and 116. Not offered in 1930-1931. (2-5)

219s. MODERN HARMONY. Devoted to analysis and practical composition using the newer tonal combinations of contemporaneous schools. Polytonality, atonality, modern modal usage and the employment of dissonance in tonal harmony are studied in the course. Prerequisite, course 102 or equivalent. (2-5 hours.) MR. GOLDTHWAITE

223f. BACH AND HANDEL. A critical investigation and comparison of the works of these two masters, including the sources of their materials and methods. Prerequisite, course 124. (2 to 5) MR. QUARLES

224w. HAYDN, MOZART, AND BEETHOVEN. The classic period. An intensive study of the works of these masters, including historical and biographical details as revealed in their works, and a critical and analytical review of their works; research and collateral reading. Prerequisite, course 124. (2 to 5 hours) MR. QUARLES

215f and 216w. ADVANCED COMPOSITION. Writing in the larger forms for string quartet, chamber music ensemble, or symphony orchestra. Prerequisite, courses 116, 118, and 104. (2 to 5) MR. QUARLES; MR. GOLDTHWAITE

217f and 218w. ORCHESTRATION. A course in writing and arranging for the full modern symphony orchestra. Prerequisite, courses 102, 118, and 144. (2) MR. GOLDTHWAITE

225f and 226w. MUSICAL RESEARCH AND CRITICISM. Hours and credit to be arranged.

227s. DRAMATIC MUSIC THROUGH THE 18TH CENTURY. A course in analysis and research with collateral reading; a detailed study of opera and oratorio from the late sixteenth century to the romantic period. Prerequisite, course 124w, 219s. (2-5) hours. MR. GOLDTHWAITE

228s. DRAMATIC MUSIC, ROMANTIC AND MODERN. Opera and oratorio from Weber to the modern school. The theories of Wagner; nationalistic opera; modern derivatives of opera and oratorio. Analysis and research with collateral reading. Prerequisite course 219s. (2-5 hours) MR. GOLDTHWAITE

In applied music a maximum of eight hours may be offered selected from the following:

- 151 and 152 Piano V and VI (2)
- 153 and 154 Piano VII and VIII (3)
- 155 and 156 Piano IX and X (4)

161 and 162 Voice V and VI (2)
 163 and 164 Voice VII and VIII (2)
 165 and 166 Voice IX and X (3)

171 and 172 Violin V and VI (2)
 173 and 174 Violin VII and VIII (3)
 175 and 176 Violin IX and X (4)

191 and 192 Organ V and VI (2)
 193 and 194 Organ VII and VIII (3)
 195 and 196 Organ IX and X (4)

PATHOLOGY

101f. GENERAL PATHOLOGY. The course consists of 51 lecture or recitation hours and 102 laboratory hours. (4) MR. NEAL; MR. ROBNETTE

102w. SPECIAL PATHOLOGY. A course of 51 lecture or recitation hours and 102 laboratory hours. Prerequisite, 101f. General Pathology. (4) MR. NEAL; MR. ROBNETT

104w. CLINICAL PATHOLOGY. An elective course of 51 lecture, recitation, or demonstration hours and 68 laboratory hours. A laboratory course covering a careful study in the chemical, bacteriological, and microscopical methods used in examining blood, urine, sputum, gastric contents, spinal fluids, feces, exudates, etc., for diagnostic purposes. Prerequisite, Bacteriology, histology and physiological chemistry. (3) MR. NEAL; MR. ROBNETT; MISS BROWN

201f and 202w. ADVANCED PATHOLOGY. The amount and character of the work will depend upon the needs and qualifications of the student. MR. NEAL; MR. ROBNETT

204f and 205w. RESEARCH. MR. NEAL; MR. ROBNETT

PHILOSOPHY

101w. INTRODUCTION TO PHILOSOPHY. Special consideration is given to Modern Science. (3) MR. KERBY-MILLER

103f. ETHICAL THEORY. An introductory study of the main problems of ethics and of the chief methods of their solution, with constant reference to the principal historic schools for illustration and interpretation. (3) MR. HUDSON

104f. ANCIENT PHILOSOPHY. The major part of Plato's *Republic* will be read. (3) MR. KERBY-MILLER

105w. MODERN PHILOSOPHY. Properly follows course 104. though this is not required. The development of modern systems and their relations to science and to political and social movements. (3) MR. HUDSON

107f and 108w. SPECIAL READING. For qualified students who desire to do reading in philosophy independent of formal courses. (1-3) MR. HUDSON; MR. KERBY-MILLER; MR. DAUGHERTY

112w. AMERICAN IDEALS. A study of the philosophic interpretations of life implied in American social and political institutions of the present, including their international reference. (3) MR. HUDSON

117w. AESTHETICS. The philosophy of beauty from a historical and critical standpoint. (3) MR. DAUGHERTY

119f. THE PHILOSOPHY OF THE STATE. The philosophy of the state from a historical and critical standpoint (3) MR. HUDSON

121f. CURRENT PHILOSOPHICAL PROBLEMS. Prerequisite, course 105 or an equivalent. Representative systems and issues of the present, including Absolute and Pluralistic Idealism, Pragmatism, the New Realism, and Bergson's Philosophy. (3) MR. KERBY-MILLER

131w Platonic Dialogues. Prerequisite 101, 104 or 105. A study of the most important dialogues (3) Mr. Kerby-Miller.

230f. SEMINARY. The Philosophy of Science. For graduate students in the special sciences. A critical study of the nature and validity of scientific method together with a study of the inter-relations of the special sciences and their relation to philosophy. (3) MR. KERBY-MILLER with members of various departments of the special sciences cooperating.

240f and w. RESEARCH AND THESIS. (3-5)

230w. SEMINARY. Subject to be determined. (Two or three hours' credit according to the amount of work done.) MR. HUDSON

240f and w. RESEARCH AND THESIS. (3-5)

PHYSICAL EDUCATION

Prerequisite for graduate study: Students wishing to elect graduate courses in physical education should consult the chairman of the department.

101f and s. PHYSICAL EXAMINATIONS AND REMEDIAL GYMNASTICS. Prerequisites, Anatomy, course 111 or 112. Methods of examination, application of exercises and massage. (3) MISS KELLY

112s. APPLIED ANATOMY AND KINESIOLOGY. For students who have not had anatomy previous to kinesiology proper. (3) MISS CLINE

120f, w, and s. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION. Problems of the administrator and supervisor; construction, equipment and care of plant; finances; selection of staff. Methods of handling enrollment, records and reports. (3) MISS MCKEE; MR. BREWER

220s. ADMINISTRATION OF INTERCOLLEGIATE AND INTERSCHOLASTIC ATHLETICS. The administrative problems involved in competitive athletics (3) MR. BREWER

230w and s. PHYSIOTHERAPY. Prerequisite, Course 101. Advanced corrective work and massage. Laboratory work done at State Hospital for Crippled Children. (2) MISS KELLY

235f and s. PHILOSOPHY OF THE DANCE. Prerequisite, Permission of instructor. (2) MISS MINTON

250f, w, and s. SPECIAL PROBLEMS IN PHYSICAL EDUCATION. Individual assignments arranged for graduate students. (3-5) MR. BREWER; MISS MCKEE

260w and s. SEMINAR IN ADMINISTRATION OF PHYSICAL EDUCATION. Prerequisite, Courses 119, 120 or with the consent of the instructor. (2) MR. BREWER

PHYSICS

In order to be admitted as a candidate for a Master's degree with a major in physics, the student must have completed at least two years of college physics and have a working knowledge of calculus.

104f. ELECTRICAL MEASUREMENTS. General physics and calculus are prerequisite. (4)

The following group of five courses constitute together a general course in advanced physics. None of them include laboratory work.

110f. ELECTRICITY AND MAGNETISM. General physics and calculus are prerequisite. (3)

112s and f. HEAT. Largely descriptive in character, including an introduction to thermodynamics. General physics is prerequisite. (3)

113s and w. LIGHT. Largely descriptive in character. General physics is prerequisite. (3)

114s and w. MECHANICS. General physics and calculus are prerequisite. (3)

117s and w. SOUND. An introduction to the modern methods and theories of sound. General physics and calculus are prerequisite. (3)

125s. FUNDAMENTALS OF HIGH-SCHOOL PHYSICS. No credit allowed for this course in Arts and Science nor toward a graduate major in physics. (2)

The following four courses consist entirely of laboratory work. They offer training in the more exact methods of laboratory measurement.

106w. IONIZATION OF GASES. A laboratory course involving experiments in the conduction of electricity through gases, electronic emissions, and radioactivity. Prerequisite, general physics and calculus. (1) or (2)

107s and f. ELECTRICITY. Much the same as the laboratory part of course 104f. Calculus is prerequisite. (1-3)

108w. LIGHT. Measurements of light wave-lengths, refractive indices, interference methods, polarization, resolving power of optical instruments, spectroscopy, etc. Prerequisite, general physics. (1-2)

116s. ADVANCED LABORATORY PHYSICS. Prerequisite, general physics and freshman mathematics. (1 or 2)

Integral calculus and two years of physics are prerequisite for all courses numbered above 200.

202s, 203f, and 204w. SPECIAL PROBLEMS. Largely laboratory work involving the study of the literature of special experiments. Intended as an introduction to research methods. (1-4)

209s,f and 210w. SEMINARY. A colloquium in which all members of the teaching staff of the department and students of sufficient attainments take part. (1)

211s and f and 212w. RESEARCH.

213s. INTRODUCTION TO THEORETICAL PHYSICS. A knowledge of simple differential equations and the more general principles of mechanics is desirable. (3). Not given in 1931.

214s and w. CONDUCTION OF ELECTRICITY THROUGH GASES. (3) in summer, (4) in winter. (Not given summer of 1931).

215s and w. ADVANCED ELECTRICITY AND MAGNETISM. (3) or (4).

217s. X-RAYS. The modern theory of X-Rays with its bearing on various physical phenomena. (3).

221s and f. DYNAMICS. (3) in summer, (4) in winter.

222w. ELECTROMAGNETIC THEORY AND LIGHT. Prerequisite, 221. (4)

230f and w. READING COURSE. Selected topics in advanced physics. The topics will vary from year to year. (3)

232w. THEORY OF SPECTRA. (3)

PHYSIOLOGY AND PHARMACOLOGY

100w. ELEMENTARY VERTEBRATE PHYSIOLOGY. Intended for students who desire a general knowledge of physiology. Three lectures and two laboratory periods a week. (5) MR. ELLIS; MISS PIERCE

102w. THE PHYSIOLOGY OF MUSCLE AND NERVE. An introductory course presenting the principles of the physiology of tissues as such, using the subject-matter of muscle, nerve and other tissue types. (3) MR. ELLIS; MR. MOTLEY

103f. ALIMENTARY MECHANISMS. The physiology of the alimentary canal, of the secretory processes, digestive mechanics, absorption, excretion, metabolism, internal secretions, heat regulation, and reproduction. (3) MR. GREENE; MR. FINDLEY; MR. WADDLE

104w. THE CIRCULATION AND RESPIRATION. (2) MR. GREENE; MR. WADDLE

105f. THE CENTRAL NERVOUS SYSTEM AND SENSE ORGANS. The reactions of the central nervous system and sense organs. (2) MR. ELLIS; MR. FINDLEY; MR. MOTLEY

108w. PHARMACOLOGY. The physiological action of drugs on man and lower animals. (4) MR. GREENE; MR. FINDLEY

216w. INTERNAL SECRETIONS. An advanced study of the hormone producing organs. Experimental and clinical. (2-3) MR. GREENE

218w. CLINICAL AND SURGICAL PHYSIOLOGY. An elective course primarily for students of Medicine. (2) MR. GREENE

222w. ADVANCED RESPIRATION. An advanced consideration of respiratory activities of man and animals. (2-3) MR. ELLIS

224w. METABOLISM. A critical study of the heat-regulating mechanisms; of temperature; food; and the dynamic activity of the thyroid and other internal secreting glands. Given in alternate years with course 216w. (2-3) MR. GREENE

225f. ADVANCED CIRCULATION. A detailed study of the blood vascular apparatus and the modification by drugs and by disease. (2-4) MR. GREENE

227f and 228w. JOURNAL CLUB. Review of current literature by the staff and graduate students. (1) MR. GREENE

231f, 232w. PHYSIOLOGICAL PROBLEMS. Elemental problems in physiology and pharmacology are studied in preparation for research. MR. GREENE; MR. ELLIS

241f and 242w. RESEARCH. Opportunity is offered for research into question of current physiological interest. MR. GREENE; MR. ELLIS

POLITICAL SCIENCE AND PUBLIC LAW

Prerequisite for graduate study in political science: An undergraduate major in political science; or a major in one of the social sciences and at least three courses in political science.

101s and f. LOCAL RURAL GOVERNMENT. A study of the development, present organization, and functions of county and township government in the United States, with especial reference to Missouri. (2-3) MR. BRADSHAW

102f. ENGLISH GOVERNMENT. The constitutional organization and practical working of the government of Great Britain and the self-governing dominions. (3) MR. HEINBERG

103s and w. THE GOVERNMENTS OF CONTINENTAL EUROPE. The constitutional organization and practical workings of the principal governments of continental Europe (3) MR. HEINBERG

104w. COLONIAL GOVERNMENT. An examination of the great historical colonial systems, and of the administration of modern dependencies, with special reference to the government of Porto Rico and the Philippine Islands. (3) MR. BRADSHAW

105s and f. POLITICAL PARTIES. A study of the theory, organization, methods of action and function of political parties, especially in the United States. (3) MR. BRADSHAW

106f. MUNICIPAL GOVERNMENT. A study of the growth of cities; their legal status; municipal organization in the United States, including mayor and council,

commission and city manager plans; the chief problems of municipal politics. (3) MR. FAUST

107w. MUNICIPAL ADMINISTRATION. A study of the functions and administrative activities of American city governments. (3) MR. FAUST

108w. STATE ADMINISTRATION. A study of the development, organization, and functions of the administrative branch of the American state governments. (3) MR. SHORT

109f. INTERNATIONAL LAW. A general treatment of the laws governing international relations in peace and war. (3) MR. MIDDLEBUSH

112f. NATIONAL ADMINISTRATION. The development, present organization, and activities of the administrative departments, boards and commissions of the national government. (3) MR. SHORT

115w. ADMINISTRATION OF AMERICAN FOREIGN RELATIONS. An examination of governmental organization in the United States for the control and conduct of foreign relations, with especial reference to the diplomatic and consular services. (3) MR. SHORT

120f. THE AMERICAN CONSTITUTION. A consideration of the American federal system, with especial reference to interstate commerce, the powers of Congress, governmental relations between the states and the United States, the constitutional limitations for the protection of life, liberty, and property; police power, taxation, and eminent domain. (3) MR. HEINBERG

175w. LEGISLATION IN THE UNITED STATES. The nature of the legislative power; constitutional limitations; organization, rules of procedure and practice of American legislative bodies; bill drafting. (2) MR. SHORT

201w. PRINCIPLES AND PROBLEMS OF PUBLIC ADMINISTRATION. Prerequisite, course 107, 108 or 112. A study of administrative organization, practice, and procedure, and the methods of controlling administrative action. (3) MR. SHORT

204f. MUNICIPAL PROBLEMS. A detailed study of selected problems of municipal government, including such problems as city charters, zoning and planning, finance, metropolitan areas. (3) MR. FAUST

205w. PROBLEMS IN POLITICAL PARTIES. Prerequisite 105f or consent of instructor. A detailed study of certain specific problems in the field of party organization, public opinion and elections. (3) MR. BRADSHAW

207f. INTERNATIONAL ORGANIZATION. Prerequisite, course 109. A study of the form and functions of the various cooperative international organizations, with especial reference to the League of Nations and Permanent Court of International Justice. (3) MR. MIDDLEBUSH

208w. PROBLEMS IN INTERNATIONAL LAW. Prerequisite, course 109. A detailed study of certain specific problems in international law. (3) MR. MIDDLEBUSH

210s and f. HISTORY OF POLITICAL THOUGHT. A review of the history of political thought from Plato to the present. (3) MR. HEINBERG

211w. MODERN POLITICAL THEORY. A review of modern political theories, with some attention to their historical settings. Recent tendencies in political theory will be considered. (3) MR. FAUST

220s and f and 221s and w. SEMINARY. Opportunity is offered for research work in political science. Credit to be arranged. MR. BRADSHAW; MR. FAUST; MR. HEINBERG; MR. MIDDLEBUSH; MR. SHORT

POULTRY HUSBANDRY

MINOR IN POULTRY HUSBANDRY

The following courses may be counted toward a minor in Poultry Husbandry; they may not be counted for a major:

104f. POULTRY JUDGING AND BREEDING. Prerequisite, course 1. Special attention is given to exhibition and production judging and breeding. (3) MR. KEMPSTER; MR. FUNK

106w. INCUBATING AND BROODING PRACTICE. May be preceded by or accompany course 2. The student hatches and raises chickens, keeping accurate records. Nine weeks, by appointment. (3) MR. FUNK

MAJOR IN POULTRY HUSBANDRY

The following courses may be counted toward a major or minor in Poultry Husbandry:

103. MARKETING POULTRY PRODUCTS. Prerequisite, course 1. A course dealing largely with the practices in commercial poultry and egg handling establishments, both in reference to fattening and killing poultry and to the handling of eggs. (3) MR. KEMPSTER

105w. POULTRY FARM MANAGEMENT. Must be preceded or accompanied by courses 1 and 2. A study of poultry farm methods and practices. (3) MR. KEMPSTER; MR. FUNK

107f and w. SPECIAL PROBLEMS. MR. KEMPSTER; MR. FUNK

200f and 201w. SEMINARY. Special investigations in poultry husbandry literature are reviewed and discussed by the class. (1) MR. KEMPSTER

202f and 203w. RESEARCH IN POULTRY HUSBANDRY. Special phases of poultry production. In some cases students will assist in experimental work being conducted by the department. MR. KEMPSTER; MR. FUNK

PREVENTIVE MEDICINE AND BACTERIOLOGY

200f and w. ADVANCED BACTERIOLOGY. Prerequisite, course 102. Amount and character of work will depend on needs and qualifications of student. The manufacture of vaccines, making and use of various sera, the Wassermann reaction, and the study of milk and water are among the subjects discussed. Hours to be arranged. MR. RAVENEL; MR. MOON

201f and 202w. RESEARCH. Prerequisite, course 102f. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. (Credit to be arranged) MR. RAVENEL; MR. MOON

203f and 204w. CONDUCT OF PUBLIC HEALTH LABORATORIES. Prerequisite, courses 102 and 200. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. (Credit to be arranged.) MR. RAVENEL; MR. MOON

PSYCHOLOGY

Psychology 1 is a prerequisite for all other courses in the department.

122f and w. ABNORMAL PSYCHOLOGY. A study of the more frequent abnormalities of personality, with special reference to their significance for mental normality. (3) MR. MCGEOCH

125f. SOCIAL PSYCHOLOGY. The psychological factors involved in social be-

havior. The course will include a critical survey of the major principles and points of view in social psychology. (3) MISS SMITH

126w. MENTAL DEVELOPMENT. The origin of mental traits and their growth from birth to maturity. (3) MISS SMITH

180w. COMPARATIVE PSYCHOLOGY. A survey of the experimental work upon the mental activities of animals, with special reference to the implications of this work for general psychology. There will be some discussion of the experimental literature upon the mental traits of different races. (3) MR. McGEOCH

195f. EXPERIMENTAL PSYCHOLOGY. A general introduction to the experimental psychology of sensation, perception, motor learning and emotion. (3) MR. McGEOCH

196w. EXPERIMENTAL PSYCHOLOGY. A general introduction to the experimental psychology of association, memory, imagination and thought. (3) MR. McGEOCH

197f. THE PSYCHOLOGY OF LEARNING. A study of the experimental work on the acquisition and retention of skilled acts, verbal and ideational materials. Theories of learning and of memory, and the implications of both facts and theories for general psychology. (3) MR. McGEOCH

198w. SYSTEMATIC PSYCHOLOGY. A survey of the contemporary schools of psychology and of their methods of treating the major problems of psychology. The course aims to give the student a critical grasp of the outstanding theoretical issues in modern psychology. (3) MR. McGEOCH

209f. PSYCHOLOGICAL TEXTBOOKS. A comparative study of the psychological systems as found in the chief textbooks and laboratory manuals on psychology published during the last thirty years. (4) MR. McGEOCH

210f and w. RESEARCH. Theoretical and experimental.

220s. MODERN VIEWPOINTS IN PSYCHOLOGY. (2½)

RURAL SOCIOLOGY

Prerequisite for graduate work: At least twelve hours of Sociology including course 1, and Rural Sociology 115, introductory courses in Agricultural Economics, Political Science, Psychology, History, and Biology, or their equivalent. It is to the student's advantage to have a reading knowledge of German and French.

115s, f, and w. RURAL SOCIOLOGY. A study of present day rural life with reference to problems and redirecive movements, institutions, and agencies. (3) MR. MORGAN

117s and f. COMMUNITY ORGANIZATION. Principles and methods of organization and development of various types of communities. Designed for teachers, county extension agents, social workers and others. Field work with additional credit optional. (3) MR. BURR

119f and w. SOCIAL CASE WORK. Deals with problems of social reconstruction of individuals and families. Students are familiarized with principles and processes of social treatment and with recognized methods of modern social work as developed in rural communities, small towns, and cities. Additional field work credit arranged. (3) MR. BURR

120f. THE CASE WORK APPROACH TO PROBLEM CHILDREN. A study of various maladjustments, social, educational, physical, commonly found in rural children, together with the causes and modern methods of treatment. The aim is to develop in the rural teacher the ability to recognize in her pupils the signs of their problems and to utilize certain techniques in solving them. (3)

121w. GROUP AND CLUB WORK. Treats of principles and methods of organization and conduct of groups and clubs, such as Boy Scouts, Girl Scouts, Camp Fire

Girls, Y. M. C. A., Y. W. C. A., Boys' and Girls' 4-H Clubs, neighborhood social organizations, and social centers. (2) MR. BURR

123f. VISITING TEACHER WORK. Considers the problems surrounding the disadvantaged child in school and possible adjustments between the home, the school, and the child, and the relations of the visiting teacher to the school teachers. (3)

190s, f, and w. LEADERSHIP. A study of the biological, psychological, and sociological aspects of leadership, and of the training of leadership in community affairs. Leaders in such fields as agriculture, business, education, religion, politics, and social organization are analyzed for the traits that give them leadership. (3) MR. MORGAN

200s, f, and w. SEMINARY. Special lectures and review of literature and of research. Credit to be arranged. MR. MORGAN; MR. BURR; MR. BURT; MISS NIEDERMEYER

219w. ADVANCED SOCIAL CASE WORK. An advanced course in which special types of individual and family problems are studied. Administrative problems incident to the organization and conduct of various forms of social and public welfare work are considered. Additional credit for advanced field work. (2) MR. BURR

223w. SOCIAL PSYCHIATRY. A lecture and reading course. The psychiatric issues involved will be presented with special reference to their application to the task of the professional social worker. In dealing with the psychoneurosis and the psychosis the only purpose will be to acquaint the trainee with the needs of the client and how these may best be met. (2) MR. BURR

231f. HISTORY OF SOCIAL WORK. An historical study of the philosophy, motives, and methods of philanthropic and social work. Development is traced through Grecian and Roman times, the early Christian era, the medieval ages, the growth of the English system and of humanitarianism to the present day social philosophy and methods. Frequent observation trips. (2) MR. BURR

232f. PUBLIC WELFARE WORK. The purpose of this course is twofold: First, it aims to trace the development of public welfare work in its varied aspects; second, it aims to give definite, practical, and technical training in public welfare work. Field work required. (2) MR. MORGAN

234w. FARMER MOVEMENTS. A critical study of the principal farmer movements in Europe and in America with a view to an evaluation of present day movements in the light of current trends in agriculture and country life. (2) MR. MORGAN

235f. HISTORICAL AND COMPARATIVE RURAL LIFE. An historical study of rural life in England, Denmark, Germany and other countries. Comparisons are made between European conditions producing particular types and present day rural problems in the United States, with a view to their possible solution. (2) MR. MORGAN

239s, f, and w. FIELD WORK. Practice work open to students taking courses 117, 119, 121, 123, 191, or 219. (1-3) MR. MORGAN; MISS NIEDERMEYER; MR. BURR

240s, f, and w. RESEARCH. A thesis is required. (2-6) MR. MORGAN; MR. BURR; MR. BURT; MISS NIEDERMEYER

*The instructor in charge should be consulted concerning prerequisites for courses.

SANSKRIT AND COMPARATIVE PHILOLOGY

See under CLASSICAL LANGUAGES AND ARCHAEOLOGY.

SOCIOLOGY

As prerequisite for graduate work in sociology, at least twelve hours of work in undergraduate courses in sociology, including course 1, are necessary and also elementary courses in European history, economics, political science, biology and psychology, or their equivalent. Students are strongly recommended to acquire a reading knowledge of French and German. A dissertation is required for the master's degree.

110f and w. **SOCIAL PATHOLOGY.** A study of the causes, extent, significance, and constructive treatment of the principal forms of social pathology in modern society. (3) MR. JENSEN

111s and w. **CRIMINOLOGY.** Prerequisite, course 1. A study of the causes of crime and the development of criminological theory and procedure, emphasizing penal and reform methods and prevention of crime. (3) MR. PIHLBLAD

112s and f. **CHILD WELFARE.** A study of the causes of the major child welfare problems, including an analysis and summary of programs, legislation, and techniques developed to deal with these problems. (3) MR. PIHLBLAD

113w. **CONSTRUCTIVE SOCIAL POLICIES.** A study of the theories and legislation dealing with such problems as eugenics, the woman's movement, compensation, vocational re-education, and other methods of social insurance and social improvement. (2) MR. PIHLBLAD

114s and w. **THE FAMILY.** Prerequisite, 8 hours of sociology. A sociological interpretation of the family as a natural and institutional group. Contemporary family disorganization, disintegration, and the reorganization of the family will be treated. (3) MR. EMIG

115s, f, and w. **RURAL SOCIOLOGY.** See Rural Sociology, 115.

116s and f. **URBAN SOCIOLOGY.** A study of social problems of urban communities with special reference to social technology or the improvement of social and living conditions. (3) MR. EMIG

117s and f. **RURAL COMMUNITY ORGANIZATION.** (See Rural Sociology, 117.)

119f and w. **SOCIAL CASE WORK.** (See Rural Sociology, 119.)

121w. **GROUP AND CLUB WORK.** (See Rural Sociology, 121.)

123f. **VISITING TEACHER WORK.** (See Rural Sociology, 123.)

125f. **GENERAL ANTHROPOLOGY.** A study of the origin and evolution of man as an animal and of the different races of mankind. The prehistoric human types, the principles of ethnology, and the characteristics of the Negro, Mongolian, American, and Caucasian races. (3) MR. JENSEN

126s and w. **CULTURAL ANTHROPOLOGY.** A study of social origins and of the earliest stages of cultural evolution; the stone and metal ages; the origins of industry, language, magic, religion, morals, science, art, and social organization in the family, horde, clan, and tribe. (3) MR. JENSEN

127f. **EMIGRATION AND IMMIGRATION.** A study of territorial movements of population with especial reference to Europe and America. Causes and extent of migration; its effects upon American and European Society; origin and characteristics of immigrant groups and their organization in the New World; problems, agencies, and processes of assimilation. (2) MR. JENSEN

128w. **SOCIAL MOBILITY.** A study of the changing status of persons and groups within the social order with especial reference to contemporary democracy. Dynamic aspects of social differentiation and stratification; processes of competition, rivalry, conflict, accommodation, etc., within mobile societies. (2) MR. JENSEN

190s, f, and w. **LEADERSHIP.** (See Rural Sociology, 190.)

191w. **EXTENSION WORK.** (See Rural Sociology, 191.)

219w. ADVANCED SOCIAL CASE WORK. (See Rural Sociology, 219.)

220s and f. THE PRINCIPLES OF SOCIOLOGY. A critical study of contemporary sociological theory. The sociological theories of recent writers will be critically examined with a view to laying the foundations for a constructive theory of the social life in modern biology and psychology. (3) MR. PIHLBLAD

221w. THE THEORY OF POPULATION. A course on the biological basis of sociology. Among the topics treated will be the growth of population, heredity, variation, and selection. The recent literature on the theory of population and its bearing upon social problems will be carefully reviewed. (2) MR. PIHLBLAD

222s and f. METHODS OF SOCIAL RESEARCH. A study of the various methods of research and investigation that can be applied to the study of social phenomena. Special problems are assigned and field work. (3) MR. JENSEN

227s and f. THE AMERICAN NEGRO. A study of the negro problem in America, the social, economic, moral, and educational status of the negro population; the psychology of the color line, racial consciousness, and other facts of psychic and social nature will be given consideration. (2) MR. PIHLBLAD

230w. HISTORY OF SOCIAL PHILOSOPHY. Lectures on the development of social thought from Aristotle to the present; the social philosophies of Plato, Aristotle, St. Augustine, Thomas Aquinas, Machiavelli, Bodin, Hobbes, Locke, Vico, Montesquieu, Rousseau, Condorcet, and the sociological systems of Comte, Spencer, Shaeffle, Lillienfeldt, Gumplowicz, Ratzenhofer, and Ward will, among others be considered. (3) MR. JENSEN

231f. HISTORY OF SOCIAL WORK. (See Rural Sociology, 231.)

232f. PUBLIC WELFARE WORK. (See Rural Sociology, 232.)

234w. FARMER MOVEMENTS. (See Rural Sociology, 234.)

235f. HISTORICAL AND COMPARATIVE RURAL LIFE. (See Rural Sociology, 235.)

237s. SEMINARY IN THE APPLICATION OF SOCIOLOGY TO THE PROBLEMS OF EDUCATION. (1½)

239s, f, and w. FIELD WORK. (See Rural Sociology, 239.)

240s, f, and w. SEMINARY. Research work upon special problems in sociology and philanthropy. (2-4) MR. MORGAN; MR. BURR; MR. EMIG; MR. PIHLBLAD

SOILS

A dissertation will be required of candidates for the master's degree, except in special cases when the department may permit the substitution of other work.

100f. SOIL FERTILITY. Prerequisite, course 1. Agricultural chemistry 101 should precede or accompany this course. (3) MR. ALBRECHT

101w. SOIL MANAGEMENT. Prerequisite, course 1. A course dealing with the principles of soil management. (3) MR. MILLER

102f. SOIL SURVEYING AND LAND APPRAISAL. Prerequisite, course 1. A course designed for those wishing to become familiar with soil survey methods and methods of land appraisal. (2) MR. KRUSEKOPF

104f. SOILS OF THE UNITED STATES. Prerequisite, course 1. The soils of the United States, their characteristics, crop adaptations, and systems of farming to which they are adapted. (2) MR. MILLER (Given in 1931-32)

105w. SOIL BACTERIOLOGY. Prerequisite, general bacteriology. Micro-organic life of the soil in relation to soil fertility. (3) MR. ALBRECHT

106w. SOIL DEVELOPMENT AND MORPHOLOGY. Prerequisite, course 1. A course having to do with the pedological principles determining soil origin and development. (2) MR. KRUSEKOPF; MR. JENNY (Not given in 1931-32)

120f, 121w, and 122s. SPECIAL PROBLEMS. Assigned problems or problems chosen

en by the student with approval. Hours by arrangement (2-5) MR. MILLER; MR. ALBRECHT; MR. KRUSEKOPF; MR. JENNY; MR. BAVER

200f and 201w. SEMINARY. Discussions of recent developments in soil science. Papers on assigned topics are presented for discussion. (1) MR. MILLER

203w. SOIL INVESTIGATIONS. A course designed to familiarize students with methods of conducting soil investigations. (Given in 1931-32) (2) MR. MILLER; MR. ALBRECHT; MR. JENNY

204w. PHYSICAL CHEMISTRY OF SOILS. Prerequisite, physical chemistry. The application of the methods of physical and colloid chemistry to soil problems with special emphasis upon the colloidal behavior of soils. (Not given in 1931-32). (3-5) MR. BAVER

205f, 206w, and 207s. SOIL RESEARCH. Special investigations in soils. MR. MILLER; MR. ALBRECHT; MR. KRUSEKOPF; MR. JENNY; MR. BAVER

SPANISH

Prerequisite: for students majoring in Spanish, 21 hours of Spanish; for students minoring in Spanish, 15 hours of Spanish.

A dissertation for the master's degree is not required, but students may elect to offer a dissertation representing an approved portion of the 32 hours' credit for which candidates ordinarily register.

105f and w. COMPOSITION AND CONVERSATION. Prerequisite, course 3 or equivalent. (3) MISS WALKER

107f. MODERN SPANISH DRAMA. Prerequisite, course 3 or equivalent. Alternates with course 109, Spanish-American Literature (not given in 1931-32). (3) MR. WARSHAW

111f. ADVANCED COMPOSITION AND CONVERSATION. Prerequisite, course 105. (2) MR. WARSHAW

115f. MODERN SPANISH NOVEL. Prerequisite, course 3 or equivalent. (3) MISS BOHANNON

117f. CERVANTES. Prerequisite 16 hours of Spanish. Alternates with course 119f, Spanish Drama of the Sixteenth and Seventeenth Centuries (not given in 1931-32). (3) MR. SCHERR

120w. MASTERPIECES OF SPANISH LITERATURE. Prerequisite, course 3 or equivalent. (3) MR. WARSHAW

122w. COMMERCIAL SPANISH. Prerequisite, course 105 or equivalent. (2) MISS WALKER

124w. SPANISH-AMERICAN LIFE AND LITERATURE. Admission by consent of the instructor. The work of the course is done in English. (1) MR. WARSHAW

126s and w. SPANISH LITERATURE OF THE EIGHTEENTH CENTURY. Prerequisite, course 3 or equivalent. Alternates with course 128w, Spanish Romantic Period (not given in 1931-32). (2; 3) MR. SCHERR; MR. WARSHAW

130w. SPANISH LYRIC POETRY. Prerequisite, course 3 or equivalent. Alternates with course 132w, The Spanish Short Story (not given in 1931-32). (2) MR. SCHERR

134s. CONVERSATION. Admission by consent of the instructor. (1) MR. WARSHAW

136s. CONTEMPORARY SPANISH PROSE. Prerequisite, course 3 or equivalent. (2) MR. WARSHAW

202w. OLD SPANISH. (3) MISS JOHNSON

205s and f and 206w. SEMINARY IN SPANISH LITERATURE. (1-4) MR. WARSHAW

207s and f and 208w. ORIGINAL INVESTIGATION IN SPANISH LITERATURE AND PHILOLOGY. (1-4) MR. WARSHAW

297f and 298w. THESIS. (Credit to be arranged) MR. WARSHAW
 PHILOLOGY. Arrangements will be made in courses 205, 206, 207, and 208 for students primarily interested in Spanish philology. Attention is called to courses in Vulgar Latin, Romance Philology, etc., offered in the Department of French and Italian.

VETERINARY SCIENCE

101f. STOCK FARM SANITATION AND DISEASE PREVENTION. Prerequisite, courses 1f, 2w; and general bacteriology (Botany 1f). *Infectious Diseases of Farm Animals*: A study of the causes, symptoms, pathology; diagnostic methods; preventive measures; preparation and use of vaccines and preventive sera. Lectures, laboratory, clinics, field demonstrations. (3) MR. CONNAWAY; MR. DURANT; MR. UREN

102w. STOCK FARM SANITATION AND DISEASE PREVENTION. Continuation of 101f. (a). *Infectious Diseases*. (2) MR. CONNAWAY; MR. DURANT; (b) *Animal Parasites*: Study of internal and external parasites of farm animals. Clinic. Study of infested hosts and action of parasiticides. (1) MR. DURANT; MR. UREN

103f. DISEASES OF POULTRY. Study of the causes, symptoms, pathology, diagnostic methods and preventive measures, lectures, laboratory and clinics. (2) MR. DURANT

104w. DISEASES OF POULTRY. Prerequisite courses 1 and Botany 1, continuation of 103f in the more advanced study of poultry diseases. A laboratory course of 2 hour periods a week with supplemental reading assignments. Microscopical, cultural and serological methods of diagnosis. (2) MR. DURANT

105f and 106w. SPECIAL PROBLEMS. Assignment of special problems for training in research in animal diseases. Prerequisite, course 101f, 102w or 104w according to problem assigned. These specific prerequisites waived in case of graduate veterinarians who desire instruction on some special problem. Hours by arrangement. MR. CONNAWAY; MR. UREN

200f and 201w. SEMINARY. Open to advanced students specializing in dairy and animal husbandry. (1) MR. CONNAWAY AND STAFF

202f and 203w. RESEARCH. Experimental investigation of animal diseases and of measures of prevention and treatment. The student may assist in Experiment Station projects now in progress or may be assigned a special problem. Hours by arrangement. MR. CONNAWAY; MR. DURANT; MR. UREN; MR. SANDERS

ZOOLOGY

Prerequisite for graduate study: It is expected that all students enrolling for the degree of Master of Arts or Doctor of Philosophy in zoology will have completed undergraduate courses equivalent to a major in zoology consisting of twenty-four hours of work as specified for the College of Arts and Science. As the facilities of the department are limited in the cases of graduate students, any who intend to enroll for either of these advanced degrees should correspond with the chairman before coming to Columbia. Graduate students majoring in other departments may elect work in zoology subject to their preparation for particular courses. Students may receive the degree of Master of Arts in zoology either by presentation of a thesis in partial fulfilment of the requirements or by completing 32 hours of graduate work and a comprehensive series of examinations.

100f. EMBRYOLOGY OF VERTEBRATES. Prerequisite, at least 8 hours of work in zoology. Designed to lay the foundation of vertebrate embryology. Successive

stages in the development of the chick and pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. (3) MISS GUTHRIE;

101f. COMPARATIVE HISTOLOGY. Prerequisite, at least 8 hours of work in zoology. A comparative study of the microscopic structure of animal cells, tissues, and organs. (3) MR. STONE

103w. PARASITOLOGY. Prerequisite, at least 8 hours of work in zoology. A study of the principles of parasitology. (3) MR. CURTIS

105s. INVERTEBRATE ZOOLOGY. Prerequisite, at least 5 hours of work in zoology. A course dealing with invertebrates, with some field study of the local fauna. (3) MR. BENNITT; MR. WOODS

110f. PROTOZOOLOGY. Prerequisite, at least 13 hours work in zoology or its equivalent in other biological lines. A general study of the protozoa. (3-5) MR. CURTIS

111f. GENETICS. Prerequisite, at least 8 hours of work in zoology or its equivalent in other biological lines. A course dealing with the experimental study of genetics. See Botany 106f for 1930-31. (3)

112w. CYTOLOGY. Prerequisite, at least 13 hours of work in zoology or an equivalent in other biological lines. A study of the cell, with special reference to problems of development and inheritance. Cytological technique. (5) MISS GUTHRIE

115f. EXPERIMENTAL ZOOLOGY. Prerequisite, at least 8 hours of zoology and 5 hours of chemistry. A course dealing with some of the fundamental principles of general physiology. (3-5) MR. BENNITT

120f, 121w, and 122s. SPECIAL PROBLEMS. Preparation for research in zoology. (3-5) MR. CURTIS; MR. BENNITT; MISS GUTHRIE; MR. WOODS

200f, 201w, and 202s. RESEARCH. A reading knowledge of French and German is essential. Investigation of unsolved problems of zoology. MR. CURTIS; MISS GUTHRIE; MR. BENNITT; MR. WOODS

205f, 206w, and 207s. SPECIAL TOPICS. Prerequisite, a reasonable foundation in undergraduate courses in zoology. Seminary study of special subjects in zoology to suit the needs of individual students. (3-5) MR. CURTIS; MR. BENNITT; MISS GUTHRIE; MR. WOODS

210f and 211w. SEMINARY. A reading knowledge of French and German is desirable. Meetings at which problems of zoological investigation are discussed by instructors and students. (1) MR. CURTIS AND STAFF

215w. ADVANCED GENETICS. Prerequisite, Botany 106f, Zoology 111f, or the equivalent. Lectures and readings from the original literature. (3) MISS GUTHRIE; MR. STADLER; MR. RICKETT

FELLOWS AND SCHOLARS

GREGORY FELLOWS

- KARL R. BOPP, A. B., B. S. in Business Administration, A. M., University of Missouri
Economics
- RAYMOND L. GARNETT, B. S. in Ed., A. M., University of Missouri
Educational Administration
- LAURA JULIA NAHM, B. S. in Ed., A. B., A. M., University of Missouri
Zoology
- MARGUERITE L. ZEIGEL, B. S. in Ed., Delta State Teachers College, A. M., University of Missouri
Mathematics

PETROLEUM GEOLOGY FELLOW

- FRANCIS H. GUNNELL, A. M., University of Missouri

GREGORY SCHOLARS

- FRANCES GUTHRIE EMBERSON, A. B., A. M., University of Missouri
English
- RALPH C. BEDELL, B. S. in Ed., Central Missouri State Teachers College, A. M., University of Missouri
Educational Psychology

VOLKER SCHOLAR IN SOCIAL SERVICE

- FRANCES VIRGINIA CUTLER HOLIDAY, B. J., University of Missouri

AGRICULTURAL RESEARCH SCHOLARS

- WILLIAM U. GARDNER, B. S. in Agr., South Dakota State College
Dairy Husbandry
- EVERETT R. HALBROOK, B. S. in Agr., University of Missouri
Poultry Husbandry
- WILLIAM EDWARD PAINTER, B. S., Iowa State College
Dairy Husbandry

PETROLEUM GEOLOGY SCHOLAR

- TED BUFFUM, A. B., University of Missouri
- CHARLES D. GLEASON, A. B., University of Missouri.

PUBLICATIONS

ACCOUNTING AND STATISTICS

SCOTT, DR., "*Valuation for Depreciation and the Financing of Replacements.*" Accounting Review, Vol. IV, No. 4.

AGRICULTURAL CHEMISTRY

HAIGH, L. D., *Testing Fertilizers.* Mo. Agr. Expt. Station Bulletins. (1928) 276, 284.
HUNTER, JESSE E., DURANT, ADRIAN J., and HOGAN, ALBERT G., *The Utilization of Food by Turkeys with Abligated Ceca.* Mo. Agr. Expt. Station Res. Bulletin 136 (1929).

HOGAN, A. G., and SHREWSBURY, C. L., *Nutritional Requirements of the Chick.* Proc. Amer. Soc. Animal Production, p. 34 (1929).

HOGAN, A. G., and SHREWSBURY, C. L., *Deficiencies of Synthetic Diets in Chick Nutrition.* Jour. of Nutrition 3, 39 (1930).

HOGAN, A. G., SHREWSBURY, C. L. and BRECKENRIDGE, G. F., *Destruction of Vitamin A by Radioactive Materials.* Jour. Biol. Chem., 87, xlii, (1930).

AGRICULTURAL ENGINEERING

JONES, M. M., *The Combine Harvester in Missouri.* Mo. Agr. Expt. Sta. Bul. 286.

WOOLEY, J. C., *Controlling Gully Erosion.* Mo. Agr. Expt. Sta. Bul. 271.

ANATOMY

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