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OF THE
UNIVERSITY OF MARYLAND

Vol 44

June 15, 1947

No. 3



THE GRADUATE SCHOOL
ANNOUNCEMENTS ISSUE
FOR THE SESSIONS OF
1947-1948

COLLEGE PARK, MARYLAND



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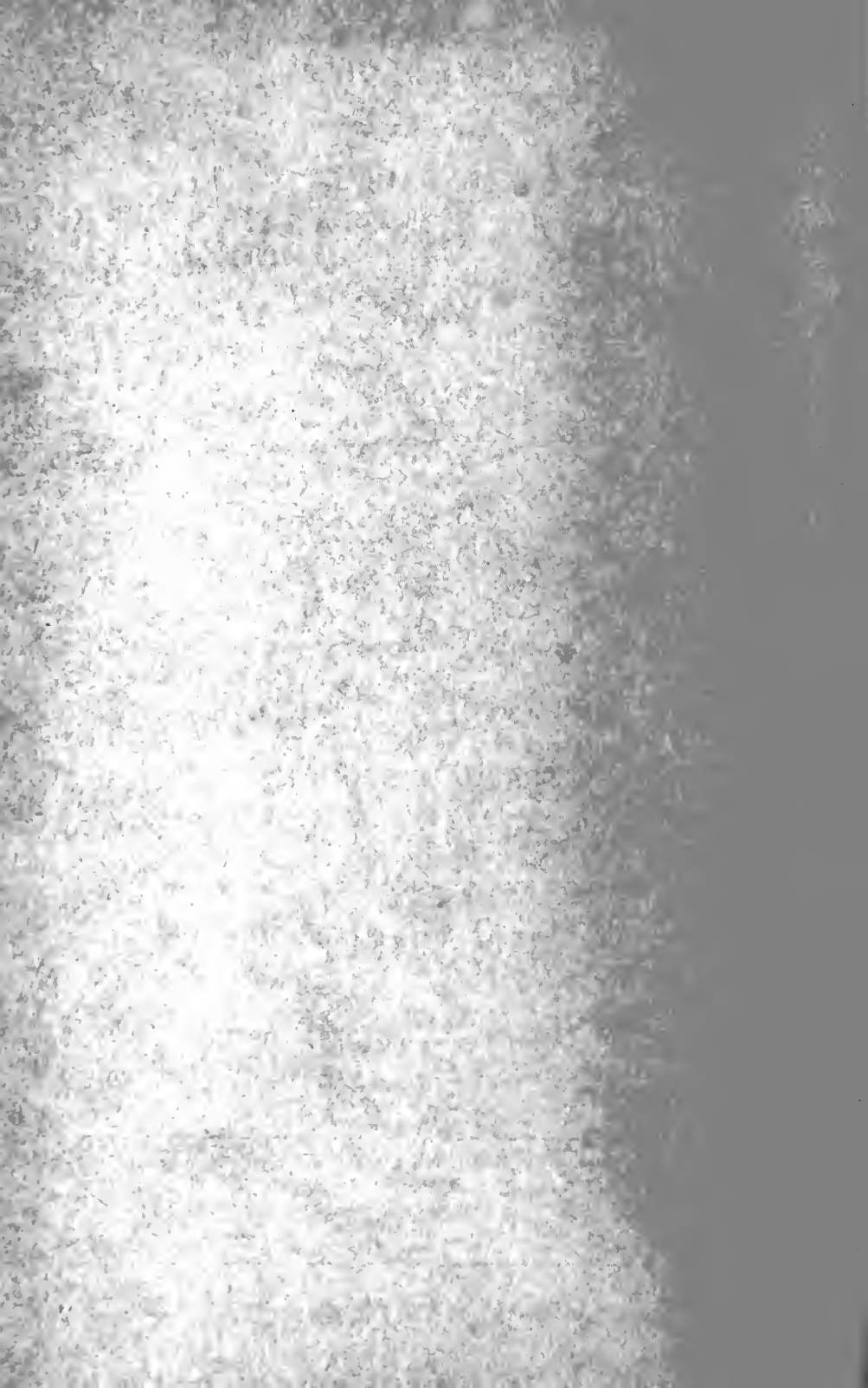


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PROPOSED CALENDAR FOR 1947-48

COLLEGE PARK

FIRST SEMESTER

1947		
Sept. 15-20	Monday-Saturday	Registration for first semester
Sept. 22	Monday	Instruction begins
Oct. 8	Friday	General convocation of faculty and students
Nov. 26	Wednesday after last class	Thanksgiving recess begins
Dec. 1	Monday, 8:00 A.M.	Thanksgiving recess ends
Dec. 20	Saturday after last class	Christmas recess begins
1948		
Jan. 5	Monday, 8:00 A.M.	Christmas recess ends
Jan. 20	Tuesday	Charter Day, Alumni Banquet
Jan. 19-27	Monday-Tuesday, inc.	First semester examinations

SECOND SEMESTER

Feb. 2-6	Monday-Friday	Registration for second semester
Feb. 9	Monday	Instruction begins
Feb. 23	Monday	Washington's Birthday, holiday
Mar. 25	Thursday	Celebration of Maryland Day
Mar. 25	Thursday after last class	Easter recess begins
Mar. 31	Wednesday, 8:00 A.M.	Easter recess ends
May 30	Sunday	Baccalaureate exercises
May 31	Monday	Memorial Day, holiday
May 27-June 4	Thursday-Friday	Second semester examinations
June 5	Saturday	Commencement

SUMMER SESSION, 1948

June 21	Monday	Registration
June 22	Tuesday	Instruction begins
June 26	Saturday	Classes as usual
July 5	Monday	Holiday
July 10	Saturday	Classes as usual
July 30	Friday	Summer session ends

BOARD OF REGENTS

	Term Expires
WILLIAM P. COLE, JR., Chairman 100 West University Parkway, Baltimore	1949
THOMAS R. BROOKES, Vice-Chairman Bel Air, Harford County	1952
STANFORD Z. ROTHSCHILD, Secretary 109 East Redwood Street, Baltimore	1952
J. MILTON PATTERSON, Treasurer 120 West Redwood Street, Baltimore	1953
E. PAUL KNOTTS Denton, Caroline County	1954
GLENN L. MARTIN Middle River, Baltimore	1951
HARRY H. NUTTLE Denton, Caroline County	1950
PHILIP C. TURNER 2 East North Avenue, Baltimore	1950
MRS. JOHN L. WHITEHURST 4101 Greenway, Baltimore	1947
CHARLES P. MCCORMICK McCormick & Company, Baltimore	1948
MILLARD E. TYDINGS Senate Office Building, Washington, D. C.	1951

ADMINISTRATIVE OFFICERS

H. C. BYRD, LL.D., President of the University
 C. O. APPLEMAN, PH.D., Dean of the Graduate School
 LUCY A. LYNHAM, A.B., Secretary to the Dean
 ADELE STAMP, M.A., Dean of Women
 GEARY F. EPPLEY, M.S., Dean of Men
 ALMA H. PREINKERT, M.A., Registrar
 HOWARD ROVELSTAD, Librarian
 C. L. BENTON, M.A., Comptroller
 FRANK K. HASZARD, B.S., Director of Procurement

THE GRADUATE COUNCIL

H. C. BYRD, LL.D., President of the University
 C. O. APPLEMAN, PH.D., Dean of the Graduate School, Chairman
 HAROLD BENJAMIN, PH.D., Professor of Education
 GUY A. CARDWELL, PH.D., Professor of English
 E. N. CORY, PH.D., Professor of Entomology
 H. F. COTTERMAN, PH.D., Professor of Agricultural Education
 N. L. DRAKE, PH.D., Professor of Organic Chemistry
 WILBERT J. HUFF, PH.D., D.Sc., Professor of Chemical Engineering
 JOHN G. JENKINS, PH.D., Professor of Psychology
 W. B. KEMP, PH.D., Director of Experiment Station
 M. MARIE MOUNT, M.A., Professor of Home and Institution Management
 H. J. PATTERSON, D.Sc., Dean Emeritus of Agriculture
 J. FREEMAN PYLE, PH.D., Professor of Economics and Marketing
 A. E. ZUCKER, PH.D., Professor of Foreign Languages
 WALTER H. HARTUNG, PH.D., Professor of Pharmaceutical Chemistry
 (Baltimore)
 EDUARD UHLENHUTH, PH.D., Professor of Gross Anatomy (Baltimore)

Office of the Graduate School
 Room 214, Agricultural Building

GENERAL INFORMATION

HISTORY AND ORGANIZATION

In the earlier years of the institution the Master's degree was frequently conferred, but the work of the graduate students was in charge of the departments concerned, under the supervision of the general faculty. The Graduate School of the University of Maryland was established in 1918, and organized graduate instruction leading to both the Master's and the Doctor's degree was undertaken. The faculty of the Graduate School includes all members of the various faculties who give instruction in approved graduate courses. The general administrative functions of the graduate faculty are delegated to a Graduate Council, of which the Dean of the Graduate School is chairman.

LOCATION

The University of Maryland is located at College Park, in Prince George's County, Maryland, on the Baltimore and Ohio Railroad, eight miles from Washington and thirty-two miles from Baltimore. Washington, with its wealth of resources, is easily accessible by train, street car and bus.

The professional schools of Medicine, Nursing, Pharmacy, Dentistry and Law are located in Baltimore, at the corner of Lombard and Greene Streets.

LIBRARIES

In addition to the resources of the University libraries the great libraries of the national capital are easily available for reference work. Because of the proximity of these libraries to College Park they are a valuable asset to research and graduate work at the University of Maryland.

GENERAL REGULATIONS

ADMISSION

An applicant for admission to the Graduate School must hold a bachelor's or a master's degree from a college or university of recognized standing. The applicant shall furnish an official transcript of his collegiate record which for unconditional admission must show creditable completion of an adequate amount of undergraduate preparation for graduate work in his chosen field. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean.

After approval of the application a matriculation card, signed by the Dean, is issued to the student. This card permits one to register in the Graduate School. After payment of the fee, the matriculation card is stamped and returned to the student. It is his certificate of membership in the Graduate School and should be retained by the student to present at each succeeding registration.

Admission to the Graduate School does not necessarily imply admission to candidacy for an advanced degree.

REGISTRATION

All students pursuing graduate work in the University, even though they are not candidates for higher degrees, are required to register in the Graduate School at the beginning of each session. **In no case will graduate credit be given unless the student matriculates and registers in the Graduate School.** The program of work for each session is arranged by the student with the major department and entered upon two course cards, which are signed first by the professor in charge of the student's major subject and then by the Dean of the Graduate School. One card is retained by the Dean. The student takes the other card, and in case of a new student, also the matriculation card, to the Registrar's office, where the registration is completed. Students will not be admitted to graduate courses until the Registrar has certified to the instructor that registration has been completed. Course cards may be obtained at the Registrar's office or at the Dean's office. The heads of departments usually keep a supply of these cards in their respective offices.

GRADUATE COURSES

Graduate students must elect for credit in partial fulfillment of the requirements for higher degrees only courses designated **For Graduates or For Graduates and Advanced Undergraduates.** Students who are inadequately prepared for graduate work in their chosen fields or who lack prerequisites for minor courses may elect a limited number of courses numbered from 1 to 99 in the general catalogue, but graduate credit will not be allowed for these courses. Courses that are audited are registered for in the same way as other courses, and the fees are the same.

PROGRAM OF WORK

The professor who is selected to direct a student's thesis work is the student's adviser in the formulation of a graduate program, including suitable minor work, which is arranged in cooperation with the instructors. To encourage thoroughness in scholarship through intensive application, graduate students in the regular sessions are limited to a program of fifteen credit hours per semester. If a student is preparing a thesis during the minimum residence for the master's degree, the registration in graduate courses should not exceed twelve hours for the semester.

SUMMER SESSION FOR TEACHERS

The University conducts a six weeks summer session for teachers at College Park, with a comprehensive undergraduate and graduate program. The University publishes a separate bulletin giving full information on this summer session for teachers. This bulletin is available upon application to the Director of the Summer Session for Teachers, University of Maryland, College Park.

GRADUATE WORK IN PROFESSIONAL SCHOOLS AT BALTIMORE

Graduate courses and opportunities for research are offered in some of the professional schools at Baltimore. Students pursuing graduate work in the professional schools must register in the Graduate School, and meet the same requirements and proceed in the same way, as do graduate students in other departments of the University. The graduate courses in the professional schools are listed on pages 73-78.

GRADUATE WORK BY SENIORS IN THIS UNIVERSITY

A senior of this University who has nearly completed the requirements for the undergraduate degree may, with the approval of his undergraduate dean and the Dean of the Graduate School, register in the undergraduate college for graduate courses, which may later be transferred for graduate credit toward an advanced degree at this University, but the total of undergraduate and graduate courses must not exceed fifteen credits for the semester. Excess credits in the senior year cannot later be used for graduate credit unless such pre-arrangement is made. Seniors who wish to register for graduate credit should apply to the Dean of the Graduate School for information about procedure.

ADMISSION TO CANDIDACY FOR ADVANCED DEGREES

Application for admission to candidacy for the Master's and for the Doctor's degree is made on application blanks which are obtained at the office of the Dean of the Graduate School. These are filled out in duplicate by the student and submitted to his major department of further action and transmission to the Dean of the Graduate School. All applications for admission to candidacy must be approved by the Graduate Council.

Admission to candidacy in no case assures the student of a degree, but merely signifies he has met all the formal requirements and is considered by his instructors sufficiently prepared and able to pursue such graduate study and research as are demanded by the requirements of the degree sought. The candidate must show superior scholarship in graduate work already completed.

Application for admission to candidacy is made at the time stated in the sections dealing with the requirements for the degree sought.

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

Advancement to Candidacy. Each prospective candidate for the Master's degree is required to make application for admission to candidacy not later than the date when instruction begins for the semester in which the degree is sought. He must have completed at least twelve semester hours of graduate work at the University of Maryland. An average grade of "B" in all major and minor subjects is required.

Minimum Residence. A residence of at least two semesters, or equivalent, at this institution, is required.

Course Requirements. A minimum of twenty-four semester hours, exclusive of thesis and registration for research, with an average grade of "B" in courses approved for graduate credit, is required for the degrees of Master of Arts and Master of Science. At the option of the major department concerned the student may be required also to register for a maximum of six semester hours for research and thesis work. The total number of credit hours required for the degree would then be thirty. If the student is inadequately prepared for the required graduate courses, either in the major or minor subjects, additional courses may be required to supplement the undergraduate work. Of the twenty-four hours required in graduate courses, not less than twelve hours and not more than sixteen semester hours must be earned in the major subject. The remaining credits must be outside the major subject and must comprise a group of coherent courses intended to supplement and support the major work. Not less than one-half of the total required course credits for the degree, or a minimum of twelve, must be selected from courses numbered 200 or above. No credit for the degree of Master of Arts or Master of Science may be obtained for correspondence courses. The entire course of study must constitute a unified program approved by the student's major adviser and by the Dean of the Graduate School.

Transfer of Credit. Credit not to exceed six semester hours, obtained at other recognized institutions, may be transferred and applied to the course requirements of the Master's degree, provided that the work was of graduate character, and provided that it is approved for inclusion in the student's graduate program at the University of Maryland. This transfer of credit is submitted to the Graduate Council for approval when the student applies for admission to candidacy for the degree. Acceptance of the transferred credits does not reduce the minimum residence requirement. The candidate is subject to final examination by this institution in all work offered for the degree.

Thesis. In addition to the twenty-four semester hours in graduate courses a satisfactory thesis is required of all candidates for the degrees of Master of Arts and Master of Science. (Exceptions may be made in the cases of candidates for the degree of Master of Arts in American Civilization. See page 11.) The thesis must demonstrate the student's ability to do independent work and it must be acceptable in literary style and composition. With the approval of the student's major professor and the Dean of the Graduate School, the thesis in certain cases may be prepared *in absentia* under direction and supervision of a member of the faculty of this institution.

The original copy of the thesis must be deposited in the office of the Graduate School not later than two weeks before the convocation at which the degree is sought. The thesis should not be bound by the student, as the University later binds all theses uniformly. An abstract of the contents of the thesis, 200 to 500 words in length, must accompany it. A manual giving full directions for the physical make-up of the thesis is in the hands of each professor who directs thesis work, and should be consulted by the student before the typing of the manuscript

is begun. Individual copies of this manual may be obtained by the student at the Dean's office, at nominal cost.

Final Examination. The final oral examination is conducted by a committee appointed by the Dean of the Graduate School. The student's adviser acts as the chairman of the committee. The other members of the committee are persons under whom the student has taken most of his major and minor courses. The chairman and the candidate are notified of the personnel of the examining committee at least one week prior to the period set for oral examinations. The chairman of the committee selects the exact time and place for the examination and notifies the other members of the committee and the candidate. The examination should be conducted within the dates specified by the Dean of the Graduate School at the end of the semester, but upon recommendation of the student's adviser, an examining committee may be appointed by the Dean of the Graduate School at any time when all other requirements for the degree have been completed. A report of the committee is sent to the Dean as soon as possible after the examination. A special form for this purpose is supplied to the chairman of the committee. Such report is the basis upon which recommendation is made to the faculty that the candidate be granted the degree sought. The period for the oral examination is usually about one hour, but the time should be long enough to insure an adequate examination.

The examining committee also approves the thesis, and it is the candidate's obligation to see that each member of the committee has ample opportunity to examine a copy of the thesis prior to the date of the examination.

A student will not be admitted to final examination until all other requirements for the degree have been met. In addition to the oral examination a comprehensive written examination may be required at the option of the major department.

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN AMERICAN CIVILIZATION

Studies in American Civilization are intended to prepare the student for teaching, for further study, and for research in the general field of American Civilization, but with emphasis on one of two disciplines: history, including European backgrounds; or literature, including European literatures, particularly English. All students will be expected to understand the development of American institutions and to demonstrate proficiency in the literary, social, economic, and political history of the United States.

With the approval of his adviser, a candidate for the Master of Arts degree with a major in American Civilization may elect in lieu of the thesis six additional hours of course work, to include at least two substantial seminar papers. The total number of credit hours required for the degree would then be thirty semester hours.

Each candidate must present credits for at least fifteen semester hours of work in American literature and American history, and credits for at least fifteen semester hours in supporting courses (nine hours if a thesis is elected). Supporting courses will normally be in such fields as European or Latin-American history, English literature, comparative literature, philosophy, art, education, sociology, economics, and politics and government.

Each candidate must demonstrate in a written examination that he possesses a reading knowledge of one foreign language.

All other requirements are the same as for the degrees of Master of Arts and Master of Science in other fields.

REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION

Thirty semester hours of course work are required, which may include courses in departments other than Education not to exceed one-half of the total thirty hours, such courses to be selected in conformity with the student's special needs as agreed upon by the student and his adviser. Of the thirty hours, not less than one-half must be on the 200 level.

At least four of the thirty semester hours must be in seminar work in connection with which two seminar papers will be prepared in specially prescribed form, approved in writing by the instructor in charge of the seminar and the Dean of the College of Education, and filed in the College of Education. One of these papers shall deal with a topic in the student's major field of concentration.

Included in the program must be courses in educational statistics and in procedure of educational research.

The requirements in regard to advancement to candidacy, transfer of credits, and final oral examination are the same as for the degrees of Master of Arts and Master of Science.

REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

The degree of Master of Business Administration represents a minimum of two semesters of graduate work in addition to the satisfaction of all undergraduate requirements for the bachelor's degree. Graduate work will normally include a minimum of twenty-four semester course hours and the completion of a satisfactory thesis. An average grade of "B" must be obtained in the twenty-four hours offered for graduate credit.

The undergraduate prerequisites for graduate work leading to the degree of Master of Business Administration may be satisfied by completion of work for the degree of Bachelor of Science in Business Administration at the University of Maryland, or by equivalent work leading to a corresponding degree at another institution, providing this work

is acceptable. Holders of Bachelor's degrees other than in Business Administration must take additional work early in their residence at the University of Maryland as follows: Principles of Economics, Principles of Accounting, the equivalent of six semester hours in Business Law, and introductory courses in each of the following: Labor Economics, Marketing, Money and Banking, and Business Statistics.

Of the twenty-four hours required in graduate courses, not less than twelve hours and not more than sixteen must be earned in the major subject. The remaining credits must be outside the major subject and must comprise a group of coherent courses intended to supplement and support the major work. (The extent of coherency may be determined by the student's major adviser.) Not less than one-half of the total required course credits for the degree, or a minimum of twelve, must be selected from courses numbered 200 or above, except that with the approval of the student's major adviser and the Dean of the College of Business and Public Administration lower numbered courses may occasionally be permitted to be offered as substitutes.

The degree of Master of Business Administration represents specialized work in a particular field of business administration. To this end course and thesis work should contribute to one field of specialization, such as Accounting, Finance, Labor, Foreign Trade, Marketing, Public Utilities, Transportation, Personnel Administration, Industrial Management or to some other field of the student's specialized interest.

Requirements for admittance to candidacy, minimum residence, transfer of credit, thesis and final examination are the same as those for the degree of Master of Arts and Master of Science.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Advancement to Candidacy. Candidates for the Doctor's degree must be admitted to candidacy at least one academic year before the final examination. Applications for admission to candidacy for the Doctor's degree are made in duplicate by the student and submitted to his major department for further action and transmission to the Dean of the Graduate School. Blanks may be obtained at the office of the Graduate School.

The applicant must have demonstrated to the head of the Foreign Language Department that he possesses a reading knowledge of French and German. With the approval of the major department and the Graduate Council, in special cases another Foreign language may be substituted for either French or German. Preliminary examinations or such other substantial tests as the departments may elect are also required for admission to candidacy.

Residence. The equivalent of three years of full time graduate study and research is the minimum required. Of the three years the equivalent of at least one year must be spent in residence at this university. On a part-time basis the time needed will be correspondingly increased. All work at other institutions offered in partial fulfillment of the re-

quirements for the Ph.D. degree is submitted to the Graduate Council for approval, upon recommendation of the department concerned, when the student applies for admission to candidacy for the degree.

The Doctor's degree is not given merely as a certificate of residence and work, but is granted only upon sufficient evidence of high attainments in scholarship, and ability to carry on independent research in the special field in which the major work is done.

Major and Minor Subjects. The candidate must select a major and one or two closely related minor subjects. At least twenty-four semester hours, exclusive of research, are required in minor work. The remainder of the required residence is devoted to intensive study and research in the major field. The amount of required course work in the major subject will vary with the department and the individual candidate. The candidate must register for a minimum of twelve semester hours of research.

Thesis. The ability to do independent research must be shown by a dissertation on some topic connected with the major subject. An original typewritten copy and two clear, plain carbon copies of the thesis, together with an abstract of the contents, 250 to 500 words in length, must be deposited in the office of the Dean at least three weeks before the convocation at which the degree is sought. It is the responsibility of the student also to provide copies of the thesis for the use of the members of the examining committee prior to the date of the final examination.

The original copy should not be bound by the student, as the university later binds uniformly all thesis for the general university library. The carbon copies are bound by the student in cardboard covers which may be obtained at the student's supply store. The abstracts are published biennially by the university in a special bulletin.

A manual giving full directions for the physical make-up of the thesis is in the hands of each professor who directs thesis work, and should be consulted by the student before typing of the thesis is begun. Students may obtain copies of this manual at the Dean's office, at nominal cost.

Final Examination. The final oral examination is held before a committee appointed by the Dean. One member of this committee is a representative of the graduate faculty who is not directly concerned with the student's graduate work. One or more members of the committee may be persons from other institutions who are distinguished scholars in the student's major field.

The duration of the examination is approximately three hours, and covers the research work of the candidate as embodied in his thesis, and his attainments in the fields of his major and minor subjects. The other detailed procedures are the same as those stated for the Master's examination.

RULES GOVERNING LANGUAGE EXAMINATIONS FOR CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1. A candidate for the Doctor's degree must show in a written examination that he possesses a reading knowledge of French and German.

With the approval of the major department and the Graduate Council, in special cases another foreign language may be substituted for either French or German. The passages to be translated will be taken from books and articles in his specialized field. Some 300 pages of text from which the applicant wishes to have his examination chosen should be submitted to the head of the Department of Foreign Languages at least three days before the examination. The examination aims to test ability to use the foreign language for research purposes. It is presumed that the candidate will know sufficient grammar to distinguish inflectional forms and that he will be able to translate readily in two hours about 500 words of text, with the aid of a dictionary.

2. Application for admission to these tests must be filed in the office of the Department of Foreign Languages at least three days in advance of the tests.

3. No penalty is attached to failure in the examination, and an unsuccessful candidate is free to try again at the next date set for these tests.

4. Examinations are held near the office of the Department of Foreign Languages, on the first Wednesday of October, February and June, at 2 p. m.

GRADUATE FEES

The fees paid by graduate students are as follows:

A matriculation fee of \$10.00. This is paid once only, upon admission to the Graduate School.

A diploma fee (Master's degree), \$10.00.

A graduate fee, including hood (Doctor's degree), \$25.00.

College Park:

A fixed charge, each semester, of \$6.00 per semester credit hour for students carrying eight hours or less; for students carrying more than eight hours, \$50.00 for the semester.

Laboratory fees range from \$2.00 to \$10.00 per course per semester.

Living Expenses and Self Help:

Board and lodging are available in many private homes in College Park and vicinity. The cost of board and room ranges from about \$50.00 to \$55.00 a month, depending on the desires of the individual. A list of accommodations is maintained in the offices of the Dean of Women and the Dean of Men.

Application for student employment, aside from fellowships and assistantships, may be made through the offices of the Dean of Men and the Dean of Women, or to department heads.

FELLOWSHIPS AND ASSISTANTSHIPS

Fellowships. A number of fellowships have been established by the University. The stipend for the University fellows is \$500 for nine months and the remission of all graduate fees except the diploma fee. Several industrial and special fellowships, with varying stipends, are also available in certain departments.

Fellows are required to render minor services prescribed by their major departments. The usual amount of service required does not exceed twelve clock hours per week. Fellows are permitted to carry a full graduate program, and they may satisfy the residence requirement for higher degrees in the normal time.

Applications for fellowships are made on blanks which may be obtained from the office of the Graduate School. The application, with the necessary credentials, is sent by the applicant directly to the Dean of the Graduate School. Applications which are approved by the Dean are forwarded to the departments, where final selection of the fellows is made. The awards of University fellowships are on a competitive basis.

Graduate Assistantships. A number of teaching and research assistantships are available in several departments. The compensation varies with the nature and amount of service required and with the term of appointment. The amount of credit allowed toward a degree likewise varies with the amount of time available for graduate study. The research assistants, especially those in the Experiment Station, usually participate in research that meets the requirements for a Master's or a Doctor's degree.

Applications for graduate assistantships are made directly to the departments concerned and appointments are made through the regular channels for staff appointments. Further information regarding these assistantships may be obtained from the department or college concerned.

COMMENCEMENT

Attendance is required at the commencement at which the degree is conferred.

Application for diploma must be filed in the office of the Registrar eight weeks before the convocation at which the candidate expects to obtain a degree.

Academic costume is required of all candidates at commencement. Those who so desire may purchase or rent caps and gowns at the Student's Supply Store. Order must be filed eight weeks before the date of convocation but may be cancelled later if the student finds himself unable to complete his work for the degree.

A time schedule, supplementing this bulletin, is issued shortly before the beginning of each semester, showing the hours and location of class meetings. This schedule is available at the office of the Graduate School, or the office of the Registrar.

The provisions of this bulletin are not to be regarded as an irrevocable contract between the student and the University. The University reserves the right to change any provision or requirement at any time within the student's term of residence.

DESCRIPTION OF COURSES

For the convenience of students in making out schedules of studies, the subjects in the following Description of Courses are arranged alphabetically:

Agricultural Economics.....	19
Agricultural Education and Rural Life.....	20
Agronomy (Crops and Soils).....	20
Anatomy.....	73
Animal Husbandry.....	21
Bacteriology.....	22, 74, 75
Biochemistry.....	31, 74
Botany.....	23, 76
Business and Public Administration.....	24
Chemistry.....	31
Comparative Literature.....	33
Dairy Husbandry.....	35
Economics.....	27
Education.....	36
Engineering.....	41
English Language and Literature.....	47
Entomology.....	49
Foreign Languages and Literature.....	50
Geography.....	28
Government and Politics.....	30
History.....	53
Home Economics.....	56
Horticulture.....	60
Mathematics.....	61
Pharmaceutical Chemistry.....	76
Pharmacognosy.....	76
Pharmacology.....	74, 77
Pharmacy.....	78
Physics.....	64, 78
Physiology.....	75
Poultry Husbandry.....	65
Psychology.....	66
Sociology.....	69
Speech.....	71
Veterinary Science.....	71
Zoology.....	72

METHOD OF NUMBERING COURSES AND COUNTING CREDIT HOURS

Courses for Advanced Undergraduates and Graduates are numbered 100 to 199; courses for Graduates only are numbered 200 and upward.

A course with a single number extends through one semester.

A course with a double number extends through two semesters.

The number of semester hours credit is shown by the arabic numerals in parentheses after the title of the course.

Examples:

Course 101. Title (3). First semester.

If a laboratory course:

Course 101. Title (3). One lecture and two laboratory periods a week, first semester.

(This is a semester course: offered once a year.)

Course 101. Title (3). First and second semesters.

(This is a semester course, repeated each semester, and except for research, seminar, and certain problem courses, may be taken only one semester.)

Course 103, 104. Title (3, 3). Three hours a week, first and second semesters.

If a laboratory course:

Course 103, 104. Title (3, 3). One lecture and two laboratory periods a week, first and second semesters.

(This is a course extending through two semesters and carrying three semester credits each semester.)

Course 103, 104. Title (3, 3). Three hours a week, second and first semesters.

(This is a course extending through two semesters, but it begins with the second semester).

Course 105, f.s. Title (3, 3). Three hours a week, first and second semesters.

(This is alternate way of listing a two-semester course).

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- A. E. 100. Farm Economics (3). First semester. Prerequisites, Econ. 31, 32, or Econ. 37. DeVault.
- A. E. 101. Marketing of Farm Products (3). Second semester. Prerequisites, Econ. 31, 32, or Econ. 37. DeVault.
- A. E. 103. Cooperation in Agriculture (3). First semester. Poffenberger.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- A. E. 104. Farm Finance (3). Second semester. Troelston.
- A. E. 105. Food Products Inspection (2). One lecture and one laboratory period a week, second semester. Staff.
- A. E. 106. Prices of Farm Products (3). Second semester. Poffenberger.
- A. E. 107. Analysis of the Farm Business (3). One lecture and two laboratory periods a week, first semester. Hamilton.
- A. E. 108. Farm Management (3). Second semester. Hamilton.
- A. E. 109. Research Problems (1-2). First and second semesters. DeVault.
- A. E. 111. Land Economics (3). First semester. Bohanan.
- A. E. 112. Agricultural Policy (3). Second semester. Poffenberger.

FOR GRADUATES

- A. E. 200, 201. Special Problems in Farm Economics (2, 2). First and second semesters. DeVault.
- A. E. 202. Seminar (1). First and second semesters. DeVault.
- A. E. 203. Research. Credit according to work accomplished. DeVault.
- A. E. 210. Taxation in Relation to Agriculture (2). Second semester. Walker.
- A. E. 211. Agricultural Taxation in Theory and Practice (3). Two lectures and one laboratory period a week, first semester. Walker.
- A. E. 212, 213. Land Utilization and Agricultural Production (3, 3). Three hours a week, first and second semesters. Baker.
- A. E. 214. Consumption of Farm Products and Standards of Living (3). Second semester. Baker.
- A. E. 215. Advanced Agricultural Cooperation (3). First semester. Poffenberger.

AGRICULTURAL EDUCATION AND RURAL LIFE

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- R. Ed. 107. Observation and Analysis of Teaching for Agricultural Students (3). Two lectures and one laboratory period a week, first semester. Ahalt.
- R. Ed. 109. Teaching Secondary Vocational Agriculture (3). First semester. Ahalt.
- R. Ed. 111. Teaching, Young and Adult Farmer Classes (1). First semester. Ahalt.
- R. Ed. 112. Departmental Management (1). One laboratory period a week, second semester. Prerequisites, R. Ed. 107, 109. Ahalt.
- R. Ed. 114. Rural Life and Education (3). Second semester. Ahalt.

FOR GRADUATES

- R. Ed. 201, 202. Rural Life and Education (3, 3). Three hours a week, first and second semesters. Prerequisite, R. Ed. 114, or equivalent. Ahalt.
- R. Ed. 207, 208. Problems in Vocational Agriculture, Related Science and Shop (2, 2). Two hours a week, first and second semesters. Ahalt.
- R. Ed. 250. Seminar in Rural Education (1-2). First and second semesters. Ahalt.
- R. Ed. 251. Research. Credit according to work done. Ahalt.

AGRONOMY

A. Crops

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Agron. 103. Crop Breeding (2). First semester. Prerequisite, Zool. 104. Kuhn.
- Agron. 151. Cropping Systems (2). Second semester. Kuhn.
- Agron. 152. Seed Production and Distribution (2). Second semester. Liden.

FOR GRADUATES

- Agron. 201. Crop Breeding (2-4). Two hours a week in addition to conference and assignments, first semester. Prerequisite, consent of instructor. Kuhn.
- Agron. 203. Seminar (1). First and second semesters. Staff.
- Agron. 204. Technic in Field Crop Research (2). First semester. Kuhn.
- Agron. 209. Research (2-6). Arranged. Staff.

B. Soils

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Soils 103. Soil Geography (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Soils 1 and Geology.
Winant and Thomas.

Soils 112. Soil Conservation (3). Two lectures and one discussion period a week, first semester. Prerequisite, Soils 1. Thomas and Winant.

Soils 120. Soil Management (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Soils 1 and 2.
Thomas.

FOR GRADUATES

Soils 201. Special Problems and Research (10-12). Arranged.
Thomas.

Soils 202, 203. Soil Science (3, 3). Three hours a week, first and second semesters. Prerequisites, Soils 1 and 2, or equivalent. Thomas.

Soils 212, 213. Soil Techniques (2, 2). Two three-hour laboratory periods a week, first and second semesters. Thomas.

ANIMAL HUSBANDRY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

A. H. 112. Livestock Markets and Marketing (2). First semester. Prerequisite, A. H. 2.

A. H. 114. Animal Nutrition (3). First semester. Prerequisites, Chem. 31, 32, 33, 34; A. H. 52.

FOR GRADUATES

A. H. 201. Special Problems in Animal Husbandry. Credit in proportion to work accomplished. First and second semesters. Staff.

A. H. 202, 203. Seminar (1, 1). First and second semesters.

A. H. 204. Research. Credit in proportion to work accomplished.
Staff.

A. H. 205. Advanced Breeding (2). Second semester. Prerequisites, Zool. 104; A. H. 53.

A. H. 206, 207. Advanced Livestock Management (3, 3). Two lectures and one laboratory period a week. First and second semesters.

BACTERIOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bact. 101. Pathogenic Bacteriology (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Bact. 5. Faber.
- Bact. 102. Lectures in Pathogenic Bacteriology (2). Two lectures a week, first semester. Prerequisite, Bact. 5. Faber.
- Bact. 103. Serology (4). Two lectures and two laboratory periods a week, second semester. Prerequisite, Bact. 101 Faber.
- Bact. 105. Clinical Methods (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Bact. 103. Faber.
- Bact. 108. Epidemiology and Public Health (3). Three lectures a week, second semester. Prerequisite, Bact. 101. Bact. 53, Strongly recommended. Faber.
- Bact. 131. Food Bacteriology (4). Two lectures and two laboratory periods a week, second semester. Prerequisite, Bact. 5. Laffer.
- Bact. 133. Dairy Bacteriology (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Bact. 5. Doetsch.
- Bact. 135. Soil Bacteriology (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Bact. 5.
- Bact. 161. Systematic Bacteriology (4). Two lectures and two laboratory periods a week, second semester. Prerequisite, 20 hours of bacteriology. Pelczar.
- Bact. 181. Bacteriological Problems (3). First and second semesters. Prerequisite, 16 credits in bacteriology. Registration only upon the consent of the instructor. Staff.

FOR GRADUATES

- Bact. 201. Advanced Pathogenic Microbiology (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, 30 credits in bacteriology and allied fields, including Bact. 103. Laffer.
- Bact. 204. Bacterial Metabolism (2). Two lectures a week, first semester. Prerequisite, 30 credits in bacteriology and allied fields, including Chemistry 161 and 162. Pelczar.
- Bact. 231. Advanced Food Bacteriology (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, 30 credits in bacteriology, including Bact. 131. Laffer.
- Bact. 280. Seminar (1). First and second semesters. Prerequisite, 30 credits in bacteriology. Staff.
- Bact. 290. Research. First and second semesters. Prerequisite, 30 credits in bacteriology. Staff.

BOTANY

A. General Botany and Morphology

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 111. **Plant Anatomy** (3). One lecture and two laboratory periods a week, first semester. Prerequisite, Bot. 51. Bamford.
- Bot. 114. **Advanced Plant Taxonomy** (3). One lecture and two laboratory periods a week, first semester. Prerequisite, Bot. 11. Bamford.
- Bot. 115. **Structure of Economic Plants** (2). Two laboratory periods a week, second semester. Prerequisite, Bot. 111. Bamford.
- Bot. 116. **History and Philosophy of Botany** (1). First semester. Prerequisites, Bot. 2, Bot. 50, or permission of instructor. Bamford.

FOR GRADUATES

- Bot. 211. **Cytology** (4). Two lectures and two laboratory periods a week, second semester. Prerequisites, Bot. 110, Zool. 104. Bamford.
- Bot. 212. **Plant Morphology** (2). Two laboratory periods a week, first semester. Prerequisites, Bot. 11, Bot. 111, or equivalent. Bamford.
- Bot. 213. **Seminar** (1). First and second semesters. Prerequisite, permission of instructor. Bamford.
- Bot. 214. **Research in Plant Cytology and Morphology**. Credit according to work done. Bamford.

B. Plant Pathology

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 121. **Diseases of Special Crops** (3). Second semester. Prerequisite, Bot. 20, or equivalent. Cox.
- Bot. 122. **Research Methods in Plant Pathology** (2). Two laboratory periods a week, first and second semesters. Prerequisite, Bot. 20, or equivalent. Cox.
- Bot. 128. **Mycology** (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Bot. 2, or equivalent. Woods.

FOR GRADUATES

- Bot. 221. **Virus Diseases** (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Bot. 20, Bot. 101. Woods.
- Bot. 225. **Research in Plant Pathology**. Credit according to work done. Staff.
- Bot. 226. **Plant Disease Control** (3). First semester. Prerequisite, Bot. 20, or equivalent. Cox.
- Bot. 229. **Pathology Seminar** (1). First and second semester. Woods.

C. Plant Physiology

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 101. Plant Physiology (4).** Two lectures and two laboratory periods a week, first semester. Prerequisites, Bot. 1, and general chemistry. Brown.
- Bot. 102. Plant Ecology (3).** Two lectures and one laboratory period a week, second semester. Prerequisite, Bot. 11, or equivalent. Brown.

FOR GRADUATES

- Bot. 201. Plant Biochemistry (2 or 4).** First semester. Prerequisites, Bot. 101, and elementary organic chemistry, or equivalent. (Not offered 1947-48).
- Bot. 202. Plant Biophysics (2).** Second semester. Prerequisites, Bot. 101, and elementary physics, or equivalent. (Not offered in 1947-1948.) Appleman.
- Bot. 203. Biophysical Methods (2).** First semester. To accompany Bot. 202. Same prerequisites. (Not offered in 1947-1948.)
- Bot. 204. Growth and Development (2).** First semester. Prerequisite, 12 semester hours of plant science. Appleman.
- Bot. 205. Salt Nutrition Seminar (1).** Second semester. (Not offered, 1947-1948.) Gauch.
- Bot. 206. Research in Plant Physiology.** Credit according to work done. Staff.

BUSINESS AND PUBLIC ADMINISTRATION

A. Business Administration.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- B. A. 120. Intermediate Accounting (5).** First semester. Prerequisite, B. A. 21.
- B. A. 121. Cost Accounting (4).** Second semester. Prerequisite, B. A. 21.
- B. A. 122. Auditing Theory and Practice (4).** Second semester. Prerequisite, B. A. 120.
- B. A. 123. Income Tax Accounting (4).** First semester. Prerequisite, B. A. 120.
- B. A. 124. Advanced Accounting (4).** Second semester. Prerequisite, B. A. 120.
- B. A. 125. C. P. A. Problems (3).** First semester. Prerequisite, consent of instructor.

- B. A. 127. Public Budgeting (3). Prerequisite, B. A. 21 and Econ. 32.
- B. A. 128. Governmental Accounting (3). Second semester. Prerequisite, B. A. 124.
- B. A. 129. Apprenticeship in Accounting (0).
- B. A. 130. Elements of Business Statistics (3). First semester.
- B. A. 131. Statistics Laboratory.
- B. A. 132, 133. Advanced Business Statistics (3, 3). Three hours a week, first and second semesters. Prerequisite, B. A. 130.
- B. A. 140. Financial Management (3). Second semester. Prerequisite, Econ. 140.
- B. A. 141. Investment Management (3). First semester. Prerequisite, B. A. 140.
- B. A. 142. Banking Policies and Practices (3). Second semester. Prerequisite, Econ. 140.
- B. A. 143. Credit Management (3). Second semester. Prerequisite, B. A. 140.
- B. A. 144. Life, Group and Social Insurance (2). First semester. Prerequisite, Econ. 32 or 37.
- B. A. 145. Property, Casualty, and Liability Insurance (2). First semester. Prerequisite, Econ. 32 or 37.
- B. A. 146. Real Estate Financing and Appraisals (2). Second semester. Prerequisites, Econ. 32 or 37, B. A. 156.
- B. A. 147. Business Cycles (3). Second semester. Prerequisite, Econ. 140.
- B. A. 150. Marketing Management (3). Second semester. Prerequisite, Econ. 150.
- B. A. 151. Advertising Programs and Campaigns (2). First semester. Prerequisite, B. A. 150.
- B. A. 152. Advertising Copy Writing and Layout (2). Second semester. Prerequisite, B. A. 151.
- B. A. 153. Purchasing Management (3). Second semester. Prerequisite, B. A. 150.
- B. A. 154. Retail Store Management (3). Second semester. Prerequisite, Econ. 150.
- B. A. 156. Real Estate Principles and Practice (2). First semester. Prerequisite, Econ. 32 or 37.

- B. A. 157. **Foreign Trade Procedure (3)**. Prerequisite, B A. 150.
- B. A. 160. **Personnel Management (3)**. Second semester. Prerequisite, Econ. 160.
- B. A. 162. **Contemporary Trends in Labor Relations (3)**. First semester. Prerequisite, B.A. 160.
- B. A. 163. **Industrial Relations (3)**. Second semester. Prerequisite, Econ. 160.
- B. A. 164. **Recent Labor Legislation and Court Decisions (3)**. Second semester. Prerequisite, Econ. 160. B. A. 160 recommended.
- B. A. 165. **Office Management (3)**. First semester. Prerequisite, B. A. 11 or junior standing.
- B. A. 166. **Business Communications (3)**. Second semester. Prerequisite, junior standing.
- B. A. 169. **Industrial Management (3)**. Second semester. Prerequisite B. A. 11 and 160.
- B. A. 170. **Transportation I, Regulation of Transportation Services (3)**. First semester. Prerequisite, Econ. 32 or 37.
- B. A. 171. **Transportation II (3)**. Prerequisite, B.A. 170.
- B. A. 172. **Transportation III (3)**. Prerequisite, B. A. 171.
- B. A. 173. **Transportation IV (3)**. Overseas Shipping. Prerequisite, B. A. 170.
- B. A. 174. **Commercial Air Transportation (3)**. First semester. Prerequisite, B.A. 150.
- B. A. 175. **Airline Administration (3)**. Second semester. Prerequisite, B. A. 174.
- B. A. 176. **Problems in Airport Management (3)**. Second semester. Prerequisite, B. A. 174.
- B. A. 180, 181. **Business Law (4, 4)**. First and second semesters. Prerequisite, senior standing. Required in all Bus. Adm. curriculums.
- B. A. 183. **Law for Accountants (2)**. Prerequisite, B. A. 181.
- B. A. 184. **Public Utilities (3)**. Second semester. Prerequisite, Econ. 32 or 37 and senior standing.
- B. A. 186. **Real Estate Law and Conveyancing (2)**. Prerequisite, B.A. 156 and 181.
- B. A. 189. **Government and Business (3)**. First semester. Prerequisite, Econ. 32 or 37. Senior standing.
- B. A. 220. **Managerial Accounting (3)**.

FOR GRADUATES

- B. A. 228. Research in Accounting.
- B. A. 229. Studies of Special Problems in the Fields of Control and Organization.
- B. A. 240. Seminar in Financial Management (1-3).
- B. A. 250. Problems in Sales Management (3).
- B. A. 251. Problems in Advertising (3).
- B. A. 252. Problems in Retail Store Management (3).
- B. A. 257. Seminar in Marketing Management.
- B. A. 258. Research in Marketing.
- B. A. 267. Research in Industrial Relations.
- B. A. 266. Research in Personnel Management.
- B. A. 262. Seminar in Contemporary Trends in Labor Relations.
- B. A. 269. Studies in Special Problems in Employer-Employee Relationships.
- B. A. 277. Seminar in Transportation (3).
- B. A. 280. Seminar in Business and Government Relationships.
- B. A. 284. Seminar in Public Utilities (3).
- B. A. 299. Thesis.

B. Economics

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Econ. 130. Economics of Consumption (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 131. Comparative Economic Systems (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 132. Advanced Economic Principles (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 134. Contemporary Economic Thought (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 135. Economic Institutions and War (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 136. International Economic Policies and Relations (3) First semester. Prerequisite Econ. 32 or 37. Econ. 131 recommended.
- Econ. 137. Economic Planning and Post-war Problems (3). Second semester. Prerequisite, Econ. 32 or 37.. Econ. 131 recommended.

- Econ. 140. Money and Banking (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 141. Theory of Money, Credit, and Prices (3). Second semester. Prerequisites, Econ. 32 and 140.
- Econ. 142. Public Finance and Taxation (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 149. International Finance and Exchange (3). Second semester. Prerequisite, Econ. 140; Econ. 141 recommended.
- Econ. 150. Marketing Principles and Organization (3). First semester. Prerequisites Econ. 32 or 37.
- Econ. 151. Economics of Cooperatives (2). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 160. Labor Economics (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 161. Government and Social Security (3). Second semester. Prerequisite, G. & P. 4, Econ. 32.
- Econ. 170. Monopoly and Competition (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 171. Economics of American Industry (3). Second semester. Prerequisite, Econ. 32 or 37.

FOR GRADUATES

- Econ. 230. History of Economic Thought (3). First semester. Prerequisite, Econ. 132.
- Econ. 231. Economic Theory in the Nineteenth Century (3). Second semester. Prerequisite, Econ. 230 or consent of instructor.
- Econ. 235. Seminar in International Economic Relations (3).
- Econ. 237, 238. Seminar in Economic Investigation (3, 3). Three hours a week, first and second semesters.
- Econ. 240. Comparative Banking Systems (3). Second semester.
- Econ. 242. Research in Governmental Fiscal Policies and Practices (3).
- Econ. 270. Seminar in Economics and Geography of American Industries (3).
- Econ. 299. Thesis. Arranged.

C. Geography

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Geog. 100, 101. Regional Geography of the United States and Canada (3, 3). First and second semester. Prerequisites, Geog. 1, 2, or Geog. 60, 61, or permission of instructor.

- Geog. 102. The Geography of Manufacturing in the United States and Canada (3). First semester.
- Geog. 110, 111. Latin America (3, 3). First and second semester.
- Geog. 115. The Peoples of Latin America (2). Second semester.
- Geog. 120. Economic Geography of Europe (3). First semester.
- Soc. 120, 121. Population. See Sociology.
- Geog. 122. Economic Resources and Development of Africa (3). Second semester.
- Geog. 123. Problems of Colonial Geography (3). First or second semester.
- Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia (3, 3). First and second semesters.
- Geog. 140, 141—The Natural Resources of the Union of Socialist Soviet Republics (3, 3). First and second semesters.
- Geog. 150—Problems of Map Evaluation I. Topographic Maps (3). First and second semesters.
- Geog. 151. Problems of Map Evaluation II. Non-topographic Special-use Maps (3). First and second semesters. Two-hour lecture and two hour laboratory a week. Prerequisite, Geog. 150.
- Geog. 160. Elementary Toponymy (3, 3). First and second semester. Prerequisite, Geog. 30 and one foreign language. .
- Geog. 170. Field Studies in Geography (3). First semester and approximately three weeks in the field immediately preceding the academic year.

FOR GRADUATES

- Geog. 220. Geomorphology (3). Second semester.
- Geog. 230. Micro-Climatology (3). First semester.
- Geog. 231. Advanced General Climatology (3). Second semester.
- Geog. 250, 251. Recent Economic Geographic Trends in Latin America (3, 3). First and second semester.
- Geog. 260, 261. Problems in the Geography of Europe and Africa (3, 3). First and second semester.
- Geog. 270, 271. Special Studies in the Geography of China (3, 3). First and second semesters.
- Geog. 290, 291. Seminar in Geography (Credit to be arranged). First and second semesters.

Geog. 292, 293. Research Work (Credit to be arranged). First and second semesters and summer.

A. E. 212. Land Utilization and Agricultural Production. See Agricultural Economics.

Geog. 299. Thesis (arranged).

In addition to individual research projects, the preparation of the "Atlas of the World."

D. Government and Politics

FOR GRADUATES AND ADVANCED UNDERGRADUATES

G. and P. 101. International Political Relations (3). Prerequisite, G. and P. 1.

G. and P. 102. International Law (3). Prerequisite G. and P. 1.

G. and P. 105. Recent Far Eastern Politics (3). Prerequisite, G. and P. 1.

G. and P. 110. Principles of Public Administration (3). Prerequisite, G. and P. 1.

G. and P. 111. Public Personnel Administration (3). Prerequisite, G. and P. 1.

G. and P. 124. Legislatures and Legislation (3). Prerequisite G. and P. 1.

G. and P. 131. Constitutional Law (3). Prerequisite, G. and P. 1.

G. and P. 141. History of Political Theory (3). Prerequisite, G. and P. 1.

G. and P. 142. Recent Political Theory (3). Prerequisite, G. and P. 1.

G. and P. 144. American Political Theory (3). Prerequisite, G. and P. 1.

G. and P. 154. Problem of World Politics (3). Prerequisite, G. and P. 1.

G. and P. 174. Political Parties and Public Opinion (3). Prerequisite, G. and P. 1.

G. and P. 181. Administrative Law (3). Prerequisite, G. and P. 1.

FOR GRADUATES

G. and P. 201. Seminar in International Political Organization (3).

G. and P. 211. Seminar in Federal-State Relations (3).

G. and P. 213. Problems of Public Administration (3).

G. and P. 214. Problems of Public Personnel Administration (3).

G. and P. 221. Seminar in Public Opinion (3).

G. and P. 251. Bibliography of Government and Politics (3).

G. and P. 261. Research in Government and Politics (3).

G. and P. 299. Thesis Course (arranged).

CHEMISTRY

Professors: Drake, Svirbely, White. Associate Professors: Pickard, Pratt, Reeve, Rollison, Wiley, Woods. Assistant Professors: Dewey, Quagliano, Stuntz.

A. Analytical Chemistry

FOR GRADUATES

- Chem. 206, 208. Spectrographic Analysis (1, 1). One three hour laboratory a week. Prerequisite Chem. 188, 190 and consent of the instructor. White.
- Chem. 221, 223. Chemical Microscopy (2, 2). One lecture and one three-hour laboratory period a week, first and second semesters. Stuntz.
- Chem. 226, 228. Advanced Quantitative Analysis (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisite, consent of instructor. Stuntz.
- Chem. 266. Biological Analysis (2). Two three-hour laboratory periods a week, second semester. Prerequisites, Chem. 19, 31, 32, 33, 34. Wiley.

B. Biochemistry

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Chem. 161, 163. Biochemistry (2, 2). Two lectures a week, first and second semesters. Prerequisites, Chem. 31, 33, or Chem. 35, 37.
- Chem. 162 164. Biochemistry Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 32, 34 or Chem. 36, 38.

FOR GRADUATES

- Chem. 261, 263. Advanced Biochemistry (2, 2). Two lectures a week. First and second semesters. Prerequisites, Chem. 141, 143, or consent of instructor.
- Chem. 262, 264. Advanced Biochemistry Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisite, consent of the instructor.
- Chem. 268. Special Problems in Biochemistry (2-4). Two to four three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 161, 162, 163, 164 and consent of the instructor.

C. Inorganic Chemistry

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Chem. 101. Advanced Inorganic Chemistry (2). Two lectures a week. second semester. Prerequisite, Chem. 23, and 37, 38.

FOR GRADUATES

- Chem. 201, 203. The Chemistry of Rarer Elements (2, 2). Two lectures a week, first and second semesters. White.
- Chem. 202, 204. Advanced Inorganic Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters.
- Chem. 205. Radiochemistry (2). Two lectures a week. Rollinson.
- Chem. 207. Chemistry of Inorganic Complex Compounds (2). Two lectures a week. Quagliano.
- Chem. 210. Radiochemistry Laboratory (1 or 2). One or two three-hour laboratory periods a week. Prerequisites, Chem. 205 (or concurrent registration therein) and consent of instructor. Rollinson.
- Chem. 239. Physical Techniques in Chemistry (2). A survey of the tools available for the solution of chemical problems by means of physical techniques.

D. Organic Chemistry

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Chem. 141, 143. Advanced Organic Chemistry (2, 2). Two lectures a week, first and second semesters. Prerequisites, Chem. 37, 38.
- Chem. 142, 144. Advanced Organic Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 19 or 23, and Chem. 37, 38.
- Chem. 146, 148. The Identification of Organic Compounds (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 141, 143, or concurrent registration therein.
- (One or more courses from the following group 241-257 will customarily be offered each semester. Two of these courses will be presented in the academic year 1947-1948.)
- Chem. 241. Stereochemistry (2). Two lectures a week. Woods.
- Chem. 245. The Chemistry of the Steroids (2). Two lectures a week. Pratt.
- Chem. 249. Physical Aspects of Organic Chemistry (2). Two lectures a week. Woods.
- Chem. 251. The Heterocyclics (2). Two lectures a week. Pratt.
- Chem. 254. Advanced Organic Preparations (2 to 4). Two to four three-hour laboratory periods a week, first and second semesters.
- Chem. 257. Organic Laboratory Methods (2). Two lectures a week. Pratt.
- Chem. 258. The Identification of Organic Compounds, an Advanced Course (2 to 4). Two to four three-hour laboratory periods a week, first and second semesters. Pratt.

Chem. 260. Advanced Organic Laboratory (1 or 2). One or two three-hour laboratory periods per week, first and second semesters. Pratt.

E. Physical Chemistry

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Chem. 181, 183. Elements of Physical Chemistry (2, 2). Two lectures a week, first and second semesters. Prerequisites, Chem. 1, 3; Phys. 1, 2; Math. 10, 11.

Chem. 182, 184. Elements of Physical Chemistry Laboratory (1, 1). One three-hour laboratory period a week, first and second semesters. May be taken ONLY when accompanied by Chem. 181, 183.

Chem. 187, 189. Physical Chemistry (3, 3). Three lectures a week, first and second semesters. Prerequisites, Chem. 19 or 21, 23; Phys. 20, 21; Math. 20, 21.

Chem. 188, 190. Physical Chemistry Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters. A laboratory course for students taking Chem. 187, 189.

FOR GRADUATES

The common prerequisites for the following courses are Chem. 187, 189, and 188, 190, or their equivalent.

One or more courses of the group, 281-307, will be offered each semester depending on demand.

Chem. 281, 283. Theory of Solutions (2, 2). Two lectures a week, first and second semesters. Prerequisite, Chem. 307. Svirbely.

Chem. 285. Colloid Chemistry (2). Two lectures a week. Pickard.

Chem. 295. Heterogenous Equilibria (2). Two lectures a week. Pickard.

Chem. 299. Reaction Kinetics (3). Three lectures per week. Svirbely.

Chem. 303. Electrochemistry (3). Three lectures a week. Pickard.

Chem. 304. Electrochemistry Laboratory (2). Two three-hour laboratory periods a week. Prerequisite, consent of instructor. Pickard.

Chem. 307. Chemical Thermodynamics (3). Three lectures a week. Svirbely.

Chem. 351. Seminar (1). First and second semesters. Staff.

Chem. 360. Research. Staff.

COMPARATIVE LITERATURE

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Comp. Lit. 101. Introductory Survey of Comparative Literature (3). First semester. Zucker.

- Comp. Lit. 102. Introductory Survey of Comparative Literature (3).
Second semester. Zucker.
- Comp. Lit. 103. The Old Testament as Literature (3). Second semester.
Zucker.
- Comp. Lit. 104. Chaucer (3). First semester. Same as Eng. 104.
Harman.
- Comp. Lit. 105. Romanticism in France (3). First semester. Staff.
- Comp. Lit. 106. Romanticism in Germany (3). Second semester.
Prahl.
- Comp. Lit. 107. The Faust Legend in English and German Literature
(3). First semester. Prahl.
- Comp. Lit. 108. Some Non-English Influences on American Literature
(3). Second semester. Zucker.
- Comp. Lit. 109. Cervantes (3). Second semester. Staff.
- Comp. Lit. 112. Ibsen (3). First semester. Zucker.
- Comp. Lit. 113. Prose Masterpieces of the Renaissance (3). Second
semester. Same as Eng. 113. (Not offered in 1946-1947.) Zeerveld.
- Comp. Lit. 114. The Greek Drama (3). First semester. Prahl.
- Comp. Lit. 121. Milton (3). Same as Eng. 121. Murphy.
- Comp. Lit. 129, 130. Literature of the Romantic Period (3, 3). Three
hours a week, first and second semesters. Same as Eng. 129, 130.
Weber.
- Comp. Lit. 144. Modern Drama (3). First semester. Same as Eng. 144.
Weber.
- Comp. Lit. 145. The Modern Novel (3). Second semester. Same as
Eng. 145. Cardwell.
- Comp. Lit. 155, 156. Four Major American Writers (3, 3). Three
hours a week, first and second semesters. Same as Eng. 155, 156.
Gravely.

FOR GRADUATES

- Comp. Lit. 201. Bibliography and Methods (3). First semester. Same
as Eng. 201. Mooney.
- Comp. Lit. 202. The History of the Theater (3) Second semester
Zucker.
- Comp. Lit. 203. Schiller (3). Same as German 204. Prahl.
- Comp. Lit. 204. Medieval Romance (3). First semester. Same as
Eng. 204. (Not offered in 1946-1947)

- Comp. Lit. 205.** Georges Duhamel, Poet, Dramatist, Novelist (3). First semester. Same as French 204. Falls.
- Comp. Lit. 206, 207.** Seminar in Renaissance Literature (3). First and second semesters. Same as Eng. 206 and 207. McManaway.
- Comp. Lit. 208.** The Philosophy of Goethe's Faust (3). Same as German 208. Zucker.
- Comp. Lit. 216, 217.** Literary Criticism (3, 3). Three hours a week, first and second semesters. Same as Eng. 216, 217. Staff.
- Comp. Lit. 227, 228.** Problems in American Literature (3, 3). Same as Eng. 227, 228. (Not offered in 1946-1947).

DAIRY HUSBANDRY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- D. H. 100.** Dairy Cattle Management (1). One laboratory period a week, first semester. Prerequisite, D. H. 1. Cairns.
- D. H. 101.** Dairy Production (3). Two lectures and one laboratory period a week, second semester. Prerequisites, D. H. 1, and A. H. 52. Cairns.
- D. H. 102.** Dairy Technology (4). Two lectures and two laboratory periods a week, first semester. Prerequisites, D. H. 1, Bact. 1, 133; Chem. 1, 3, 19, 31, 33, 32, 34. Gould.
- D. H. 105.** Dairy Breeds and Breeding (2). Second semester. Prerequisites, D. H. 1; Zool. 104; A. H. 53. Cairns.
- D. H. 110.** Butter and Cheese Making (4). Two lectures and two laboratory periods a week, second semester. Prerequisites, D. H. 1, 109; Bact. 1, 133; Chem. 1, 3. (Alternate years given in 1947-48). Larsen.
- D. H. 111.** Concentrated Milk Products (2). One lecture and one laboratory period a week, second semester. Prerequisites, D. H. 1, 109; Bact. 1, 133; Chem. 1, 3. (Alternate years not given in 1947-48). Larsen.
- D. H. 112.** Ice Cream Making (3). Two lectures and two laboratory periods a week, first semester. Prerequisites, D. H. 1, 109; Bact. 1, 133; Chem. 1, 3. Larsen.
- D. H. 113.** Market Milk (4). Two lectures and two laboratory periods a week, second semester. Prerequisites, D. H. 1, Bact. 1, 133; Chem. 1, 3. Gould.
- D. H. 114.** Special Laboratory Methods (4). Two lectures and two laboratory periods a week, second semester. Prerequisites, D. H. 1, Bact. 1, 133; Chem. 1, 3, 19, 31, 33, 32, 34. Gould.

- D. H. 120, 121. Dairy Seminar (1, 1). One hour a week, first and second semesters. Prerequisites, D. H. 1. Cairns, Gould.
- D. H. 123. Methods of Dairy Research (2-5). First and second semesters. Shaw, Gould.

FOR GRADUATES

- D. H. 201. Advanced Dairy Production (3). First semester. Cairns.
- D. H. 202. Advanced Dairy Technology (3). First semester. Gould.
- D. H. 204. Special Problems in Dairying (2-5). First and second semesters. Staff.
- D. H. 205. Seminar (1). First and second semesters. Staff.
- D. H. 208. Research. Credit to be determined by amount and quality of work done. Staff.

EDUCATION

A student in Education has the option of qualifying for the degree of Master of Arts or for the degree of Master of Education. (For requirements see pages 9 and 12.)

Special Departmental Requirements and Information

MASTER OF ARTS AND MASTER OF EDUCATION

Students who do not complete the requirements for Master's degree within six years of the date of matriculation may be required to take supplementary course work at the rate of two semester hours for each year the completion of the course requirements is deferred beyond six years, or to take special examinations based upon up-to-date materials in courses more than six years old.

A qualifying written examination is required of all candidates for a degree, to be taken after the student has successfully completed ten semester hours, and before he has completed nineteen hours (Master of Arts), or twenty-five hours (Master of Education). This examination covers the general information a student should have in the field of education and in his minor field. To assist in a choice of reading in preparation for the examination, a list has been prepared and is available in the office of the College of Education. The examination is usually given on the third Saturday of January and May and on the fourth Saturday of July, simultaneously at College Park and Baltimore.

Candidates for the degree of Master of Education who are high school teachers not preparing for administrative positions are expected to take at least twelve semester hours in their subject fields.

In addition to the general requirements for admission, applicants for unconditional admission with a major in Education must have had six-

teen semester hours of undergraduate work in Education of acceptable quality, equivalent in character to the eighteen hours required in the junior and senior years of the University of Maryland.

DOCTOR OF PHILOSOPHY

The Department of Education offers work towards the degree of Doctor of Philosophy with major or minor in the following fields:

a. **General Education:** includes history of education, comparative education, educational sociology, secondary education, elementary education, and adult education.

b. **Educational Administration:** includes organization and administration of elementary, secondary, and higher education; school finance, business administration of schools; and supervision of elementary and secondary schools.

c. **Curriculum and Instruction:** includes principles of curriculum making, special methods and curricula in various fields, guidance, and research studies in the teaching of special subjects.

In addition to the general university requirements for the degree the following additional requirements must be met by students proposing to major in one of the above fields.

1. Qualifying examination, oral or written, or both, at the discretion of the department, covering student's undergraduate and first year of graduate preparation, in education and related fields, to be taken as soon as possible after completion of the first year of graduate work and in any event required before receiving the department's official permission to take work beyond the Master's degree with the purpose of applying for candidacy for the doctorate.

2. The preliminary examination for admission to candidacy for the Ph.D. degree will include a written examination covering the student's preparation in major and minor fields, and an oral examination covering his plan of research for the doctoral dissertation.

A. History, Principles, Curriculum, and Administration

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- | | | | |
|----------|--|-----------------------|-----------|
| Ed. 100. | History of Education I (2). | First semester. | Benjamin. |
| Ed. 101. | History of Education II (2). | Second semester. | Benjamin. |
| Ed. 102. | History of Education in the United States (2). | Summer session, 1948. | Benjamin. |
| Ed. 105. | Comparative Education—European (2). | Second semester. | Benjamin. |
| Ed. 106. | Comparative Education—Latin American (2). | First semester. | Benjamin. |

- Ed. 110. **The Teacher and School Administration (2)**. Summer session, 1948.
- Ed. 121. **The Language Arts in the Elementary School (2)**. Summer session, 1948.
- Ed. 122. **The Social Studies in Elementary Schools (2)**. Summer session, 1948.
- Ed. 126. **Elementary School Curriculum (2)**. Summer session, 1948.
- Ed. 130. **Theory of the Junior High School (2)**. Second semester.
Newell.
- Ed. 131. **Theory of the Senior High School (2)**. Second semester.
Newell.
- Ed. 140. **Curriculum, Instruction, and Observation (3)**. Second semester. Graduate credit is allowed only by special permission. Separate sections are offered in the following subject-matter areas: English, Social Studies, Foreign Languages, Science, Mathematics, Business Education, Industrial Education, Physical Education for Men, Physical Education for Women.
- Ed. 141. **High School Course of Study—English (2)**. First semester.
Bryan.
- Ed. 142. **High School Course of Study—Literature (2)**. Second semester.
Bryan.
- Ed. 146. **Techniques of Teaching Office Skills (2)**. First semester and summer session, 1948.
Patrick.
- Ed. 147. **Audio-Visual Education (2)**. First semester and summer session, 1948.
Brechbill.
- Ed. 150. **Educational Measurement (2)**. First semester and summer session, 1948. Brechbill.
- Ed. 151. **Remedial Reading Instruction (2)**. First semester.
Schindler.
- Ed. 152. **The Adolescent: Characteristics and Problems (2)**. Second semester.
- Ed. 155. **Child Development and Guidance in Elementary Schools (2)**. First semester and summer session, 1948.
Schindler.
- Ed. 157. **Tests and Measurements in Vocational Education (2)**. Summer session 1948.
Brechbill.
- Ed. 160. **Educational Sociology—Introductory (2)**. First semester.
Schindler.
- Ed. 161. **Guidance in the Schools (2)**. First semester.
Schindler.
- Ed. 170. **Introduction to Special Education (2)**. (Not offered in 1947-1948.)

Ed. 171. Education of Retarded and Slow-learning Children (2). Second semester.

Ed. 191. Conservation of Natural Resources (2 or 3). First semester and summer session, 1948. Barry.

FOR GRADUATES

Ed. 205. Seminar in Compative Education (2). Benjamin.

Ed. 209. Seminar in History of Education (2). Second semester and summer session, 1948. Benjamin.

Ed. 210. Administration and Organization of Public Education (2). First semester. Newell.

Ed. 211. Administration, Organization, and Supervision of Secondary Schools (2). Second semester. Newell.

Ed. 212. School Finance and Business Administration (2). Second semester and summer session, 1948. Newell.

Ed. 215. Public Education in Maryland (2). Summer session, 1948.

Ed. 216. High School Supervision (2). Second semester and summer session, 1948. Newell.

Ed. 217. Administration and Supervision in the Elementary School (2). Summer session, 1948.

Ed. 219. Seminar in School Administration (2). First semester and summer session, 1948. Newell.

Ed. 229. Seminar in Elementary Education (2). Summer session, 1948.

Ed. 232. Student Activities in the High School (2). Summer session, 1948.

Ed. 236. Curriculum Development in the Secondary School (2). Summer session, 1948. Meshke.

Ed. 239. Seminar in Secondary Education (2). First semester, and summer session, 1948. Newell.

Ed. 244. Applications of Theory and Research to Elementary School Teaching (2). Second semester and summer session, 1948. Schindler.

Ed. 245. Applications of Theory and Research to Secondary School Teaching (2). Second semester and summer session, 1948. Brechbill.

Ed. 246. Principles and Problems of Business Education (2). Summer session, 1948. Patrick.

Ed. 247. Seminar in Science Education (2). (Not offered in 1947-1948.)

- Ed. 248. Seminar in Vocational Education (2). First semester, and summer session, 1948. Hornbake.
- Ed. 261. Counseling Techniques (2). Summer session, 1948.
- Ed. 262. Occupational Information (2). Summer session, 1948.
- Ed. 268. Seminar in Educational Sociology (2). Second semester. Schindler.
- Ed. 269. Seminar in Guidance (2). First semester, and summer session, 1948.
- Ed. 278. Seminar in Special Education (2). (Not offered in 1947-1948.)
- Ed. 279. Seminar in Adult Education (2). Summer session, 1948. Benjamin.
- Ed. 280. Research Methods and Materials in Education (2). Summer session, 1948. Meshke.
- Ed. 289. Research (1-6). Staff.

B. Home Economics Education

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- H. E. Ed. 101. Curriculum, Instruction, and Observation—Home Economics (3). Second semester. Meshke.
- H. E. Ed. 102. Problems in Teaching Home Economics (2). First semester. Meshke.
- H. E. Ed. 110. Child Development (3). First and second semesters and summer session, 1948. McNaughton.
- H. E. Ed. 111. Curriculum, Instruction, and Observation—Nursery School (3). First semester. McNaughton.
- H. E. Ed. 112. Play and Play Materials (2). Second semester. McNaughton.
- H. E. Ed. 113. Education of the Young Child I (3). First semester. McNaughton.
- H. E. Ed. 114. Education of the Young Child II (3). Second semester. McNaughton.
- H. E. Ed. 116, 117. Creative Expression: Art, Music, Dance (3, 3). First and second semesters. McNaughton.

FOR GRADUATES

- H. E. Ed. 200. Seminar in Home Economics Education (3). First semester, summer session, 1948. Meshke.
- H. E. Ed. 250. Evaluation of Home Economics Education (2). Summer session, 1948. Meshke.

C. Industrial Education

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ind. Ed. 164. **Shop Organization and Management (2)**. First semester.
- Ind. Ed. 165. **Modern Industry (2)**. Summer session, 1948.
- Ind. Ed. 168. **Trade or Occupational Analysis (2)**. Summer session, 1948.
- Ind. Ed. 169. **Construction of Vocational and Occupational Courses of Study (2)**. Summer session, 1948.
- Ind. Ed. 170. **Principles and Practices of Vocational Education (2)**. First semester and summer session, 1948.

FOR GRADUATES

- Ind. Ed. 207. **Philosophy of Industrial Arts Education (2)**. First semester. Hornbake.
- Ind. Ed. 214. **School Shop Planning and Equipment Selection (2)**. Second semester and summer session, 1948. Hornbake.
- Ind. Ed. 216. **Supervision of Industrial Education (2)**. Second semester. Hornbake.
- Ind. Ed. 220. **Organization, Administration and Supervision of Vocational Education (2)**. Second semester and summer session, 1948.
- Ind. Ed. 240. **Research in Industrial Arts and Vocational Education (2)**. Staff.
- Ind. Ed. 241. **Content and Method of Industrial Arts (2)**. Summer session. Hornbake.
- Ind. Ed. 248. **Seminar in Vocational Education (2)**. Second semester. Hornbake.

ENGINEERING**A. Aeronautical Engineering**

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Aero. E. 101, 102. **Aerodynamics (3, 3)**. Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Math. 20, 21; Phys. 20, 21.
- Aero. E. 103. **Airplane Detail Drafting (1)**. One laboratory period a week, first semester. Prerequisite, Dr. 1, 2, 3.
- Aero. E. 104. **Airplane Layout Drafting (2)**. Two laboratory periods a week, second semester. Prerequisite, Aero. E. 103.
- Aero. E. 105, 106. **Airplane Fabrication Shop (1, 1)**. One laboratory period a week, first and second semesters. Prerequisite, Shop 3.

- Aero. E. 107, 108. Airplane Design (4, 4).** Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 50; Aero. E. 102, 104.
- Aero. E. 109, 110. Aircraft Power Plants (4, 4).** Three lectures and one laboratory period a week, first and second semesters. Prerequisites, Mech. 50; M. E. 100, 101.
- Aero. E. 111, 112. Aeronautical Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters.
- Aero. E. 115, 116. Mechanics of Aircraft Structures (3, 3).** Three hours a week, first and second semesters. Prerequisites, Mech. 50 and Math. 64.

FOR GRADUATES

- Aero. E. 200, 201. Advanced Aerodynamics (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Aero, E. 101, 102; Math. 64.
- Aero. E. 202, 203. Advanced Aircraft Structures (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisite, Aero. E. 115, 116.
- Aero. E. 204, 205. Aircraft Dynamics (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Mech. 50; Math. 64.
- Aero. E. 206, 207. Advanced Aircraft Power Plants (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, M. E. 100, 101; Aero. E. 109, 110.
- Aero. E. 208, 209. Advanced Aircraft Design and Construction (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, Aero E, 107, 108; Math. 64.

B. Chemical Engineering

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ch. E. 103 f,s. Elements of Chemical Engineering (3, 3).** Three hours a week, both semesters. Prerequisites, Chem. 1, 3; Phys. 20, 21.
Huff.
- *Ch. E. 104. Chemical Engineering Seminar (1).** One hour a week, both semesters. Prerequisites, permission of department. Bonney.
- Ch. E. 105 f.s. Advanced Unit Operations (5, 5).** Two lectures and one all-day laboratory a week, both semesters. Prerequisites, Ch. E. 103 f,s; Chem. 187, 188, 189, 190. Laboratory fee, \$8.00 per semester.
Bonney.
- Ch. E. 106 f,s. Minor Problems (6, 6).** Six hours a week, both semesters. Prerequisites, Ch. E. 105 or simultaneous registration therein.
Huff, Bonney and Staff.

Not offered 1947-1948.

*The contents of this course are constantly changing so a student may receive a number of credits by re-registering.

- Ch. E. 107. **Fuels and Their Utilization (3)**. Three hours a week, first semester. Prerequisites, Ch. E. 103, f,s, or permission of the department. Huff.
- Ch. E. 108 f,s. **Chemical Technology (2, 2)**. Two hours a week, both semesters. Prerequisite, Ch. E. 103, or simultaneous registration therein or permission of the department. Bonney.
- Ch. E. 109 f,s. **Chemical Engineering Thermodynamics (2, 2)**. Two hours a week, both semesters. Prerequisites, Ch. E. 103, f,s.; Chem. 187, 188, 189, 190, or permission of the department. Bonney.
- Ch. E. 110. **Chemical Engineering Calculations (3, 3)**. Three hours a week, second semester. Prerequisites, Math. 20, 21; Ch. E. 103 f,s. Bilbrey.

FOR GRADUATES

- Ch. E. 201 f,s. **Graduate Unit Operations (5, 5 or more)**. One hour conference, three or more three-hour laboratory periods a week, both semesters. Prerequisite, permission of the department. Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. f,s. **Gas Analysis (3)**. One lecture and two three-hour laboratory periods a week, one semester, to be arranged. Prerequisite, permission of the department.* Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. 203. **Graduate Seminar (1)**. One hour a week, each semester. The content of this work is constantly changing so a student may receive a number of credits by re-registering. Prerequisite, permission of the department. Bonney.
- Ch. E. 205. **Research**. Prerequisites and credits to be arranged for individuals. Laboratory fee, \$8.00 per semester. Huff, Bonney.
- Ch. E. 207 f,s. **Plant Design Studies (3, 3)**. Three hours a week, both semesters. Prerequisite, permission of the department. Huff.
- Ch. E. 209 f,s. **Plant Design Laboratory Studies (3, 3)**. Three laboratory periods a week, both semesters. Prerequisite, permission of the department. Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. 210 f,s. **Gaseous Fuels (2, 2)**. Two hours a week, both semesters. Prerequisite, permission of the department. Huff.

C. Civil Engineering

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- C. E. 100. **Theory of Structures (4)**. Three lectures and one laboratory period a week, second semester. Prerequisite, Mech. 50.
- C. E. 101. **Elements of Highways (3)**. Two lectures and one laboratory period a week, first semester. Prerequisite, Mech. 50.

- C. E. 102. Structural Design (6). Four lectures and two laboratory periods a week, first semester. Prerequisite, C. E. 100.
- C. E. 103. Concrete Design (6). Four lectures and two laboratory periods a week, second semester.
- C. E. 104, 105. Municipal Sanitation (3, 3). Two lectures and one laboratory period a week, first and second semesters. Prerequisite, C. E. 50.
- C. E. 106. Soils and Foundations (3). Two lectures and one laboratory period a week, second semester. Prerequisite, C. E. 100.

FOR GRADUATES

- C. E. 200. Advanced Properties of Materials (3). First or second semester. Prerequisite, Mech. 52 or equivalent.
- C. E. 201. Advanced Strength of Materials (3). First or second semester. Prerequisites, Mech. 50, 51 or equivalent.
- C. E. 202. Applied Elasticity (3). First or second semester. Prerequisite, Math. 64 or equivalent.
- C. E. 203. Soils Mechanics (3). First or second semester. Prerequisite, C. E. 106 or equivalent.
- C. E. 204. Advanced Foundations (3). First or second semester. Prerequisites, C. E. 102, 103, 106 or equivalent.
- C. E. 205. Highway Engineering (3). First or second semester. Prerequisite, C. E. 101 or equivalent.
- C. E. 206. Theory of Concrete Mixtures (3, 3). First and second semesters. Prerequisite, Mech. 52 or equivalent.
- C. E. 207. Advanced Structures (4). Three lectures and one laboratory period a week. Prerequisites, C. E. 102, 103.
- C. E. 208. Research. Credit in accordance with work done. First and second semesters.

D. Electrical Engineering

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- E. E. 100. Alternating-Current Circuits (6). Five lectures and one laboratory period a week, first semester. Prerequisite, E. E. 1.
- E. E. 101. Engineering Electronics (6). Five lectures and one laboratory period a week, second semester. Prerequisite, E. E. 100.
- E. E. 102, 103. Alternating-Current Machinery (4, 4). Three lectures and one laboratory period a week, first and second semesters. Prerequisite, E. E. 100.
- E. E. 104. Communications Networks (3). Second semester. Prerequisite, E. E. 101.

- E. E. 105, 106. **Radio Engineering** (4, 4). Three lectures and one laboratory period a week, first and second semesters. Prerequisite, E. E. 101.
- E. E. 108. **Electric Transients** (3). First semester. Prerequisite, E. E. 101.
- E. E. 109. **Ultra-High-Frequency Phenomena** (3). Second semester. Prerequisites, E. E. 104 and E. E. 105.
- E. E. 114. **Applied Electronics** (3). Three lectures a week (including demonstration lectures), first semester. Prerequisite, E. E. 101.
- E. E. 116. **Alternating-Current Machinery Design** (3). Two lectures and one calculation period a week, first semester. Prerequisite, E. E. 103.

FOR GRADUATES

- E. E. 200, 201. **Symmetrical Components** (3, 3). Three lectures a week, first and second semesters. Prerequisite, E. E. 103.
- E. E. 202, 203. **Operational Circuit Analysis** (3, 3). Three lectures a week, first and second semesters. Prerequisite, undergraduate major in either physics or electrical engineering.
- E. E. 204, 205. **Advanced Circuit Analysis** (3, 3). Three lectures a week, first and second semesters. Prerequisite, undergraduate major in either physics or electrical engineering.
- E. E. 206, 207. **Ultra-High-Frequency Techniques** (3, 3). Three lectures a week, first semester; two lectures and one laboratory period a week, second semester. Prerequisite, E. E. 106 or equivalent.
- E. E. 210, 211. **Advanced Radio Engineering** (3, 3). Three lectures a week, first and second semesters. Prerequisite, E. E. 106 or equivalent.
- E. E. 212, 213. **Automatic Regulation** (3, 3). Three lectures a week, first and second semesters. Prerequisite, undergraduate major in either physics or electrical engineering.
- E. E. 215, 216. **Radio Wave Propagation** (3, 3). Three lectures a week, first and second semesters. Prerequisite, undergraduate major in either physics or electrical engineering.
- E. E. 217, 218. **Theory of Servomechanisms** (3, 3). Three lectures a week, first and second semesters. Prerequisite, E. E. 203 or equivalent.
- E. E. 220. **Research**. Electrical engineering research project.

E. Mechanical Engineering

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- M. E. 100. **Thermodynamics** (3). Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Math. 20, 21; Phys. 20, 21.

- M. E. 101. **Heat Transfer (2)**. First semester. Two lectures a week. Prerequisites, M. E. 54 and M. E. 100.
- M. E. 102. **Heating and Ventilation (3)**. First semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100, 101.
- M. E. 103. **Refrigeration (3)**. Second semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100, 101.
- M. E. 104, 105. **Prime Movers (4, 4)**. Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 101; M. E. 50, 51.
- M. E. 106, 107. **Mechanical Engineering Design (4, 4)**. Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 50; M. E. 100, 101.
- M. E. 108, 109. **Mechanical Laboratory (2, 2)**. One lecture and one laboratory period a week, first and second semesters.

FOR GRADUATES

- M. E. 200, 201. **Advanced Dynamics (3, 3)**. Three hours a week, first and second semesters. Prerequisites, Mech. 2, 50; Math. 64; M. E. 106, 107; M. E. 108, 109.
- M. E. 202, 203. **Applied Elasticity (3, 3)**. Three hours a week, first and second semesters. Prerequisites, Mech. 2, 50; Math. 64; M. E. 108, 109.
- M. E. 204, 205. **Advanced Thermodynamics and Heat Transfer (3, 3)**. Three hours a week, first and second semesters. Prerequisites, M. E. 100, 101; M. E. 106, 107; Math. 64.
- M. E. 206, 207. **Advanced Machine Design (3, 3)**. One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 108, 109.
- M. E. 208, 209. **Steam Power Plant Design (3, 3)**. One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 106, 107.
- M. E. 210, 211. **Advanced Fluid Mechanics (3, 3)**. Three hours a week, first and second semesters. Prerequisites, M. E. 54; Math. 64.
- M. E. 212, 213. **Advanced Steam Power Laboratory (2, 2)**. One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 204, 205.
- M. E. 214, 215. **Advanced Applied Mechanics Laboratory (2, 2)**. One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 200, 201 and M. E. 202, 203.

- M. E. 216, 217. **Advanced Internal Combustion Engine Design (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 106, 107; M. E. 108, 109; and concurrent registration in M. E. 200, 201 and M. E. 204, 205.
- M. E. 218, 219. **Advanced Internal Combustion Engine Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 216, 217.
- M. E. 220. **Seminar.** Credit in accordance with work outlined by Mechanical Engineering staff.
- M. E. 221. **Research.** Credit in accordance with work outlined by Mechanical Engineering staff.
- M. E. 222. **Advanced Metallography (3).** First or second semester. Two lectures and one laboratory period a week. Prerequisites, Mech. 50; M. E. 533
Jackson.
- M. E. 223, 224. **Steam and Gas Turbine Design (3, 3).** First and second semesters. Prerequisites, M. E. 100, M. E. 101, M. E. 106-107, and Math. 64.
Shreeve.

ENGLISH LANGUAGE AND LITERATURE

Special Departmental Requirements

DOCTOR OF PHILOSOPHY

1. Candidates for the degree of Master of Arts in the Department of English must demonstrate a reading knowledge of a foreign language at the time of admission, or not later than three months before taking the degree. Choice of French or German is recommended.

2. A final written examination will be based in part upon the courses pursued and in part upon first-hand knowledge of all the literary works included in the departmental list of reading for the Master's degree. The examination will test the candidate's powers of analysis and criticism.

DOCTOR OF PHILOSOPHY

1. Candidates for the degree of Doctor of Philosophy in the Department of English must demonstrate a reading knowledge of German and one other approved modern foreign language.

2. Candidates must pass a comprehensive written examination at least three months before they expect to be awarded degrees. This examination will include linguistics (morphology and phonology) and each of the major literary fields.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Eng. 101. **History of the English Language (3).** Second semester.

Harman.

- Eng. 102. Old English (3). First semester. Ball.
- Eng. 103. Beowulf (3). Second semester. Ball.
- Eng. 104. Chaucer (3). First semester. Harman.
- Eng. 106. English and Scottish Ballads (3). Second semester.
Cooley.
- Eng. 110, 111. Elizabethan and Jacobean Drama (3, 3). Three hours
a week, first and second semesters. (Not offered in 1947-1948).
Zeeveld.
- Eng. 112. Poetry of the Renaissance (3). First semester. Zeeveld.
- Eng. 113. Prose of the Renaissance (3). Second semester. Zeeveld.
- Eng. 115, 116. Shakespeare (3, 3). Three hours a week, first and
second semesters. Zeeveld.
- Eng. 120. English Drama from 1660 to 1800 (3). Second semester.
Weber.
- Eng. 121. Milton (3). First semester. Murphy.
- Eng. 122. Literature of the Seventeenth Century (3). second semester.
- Eng. 125. Literature of the Eighteenth Century (3). Second semes-
ter.
- Eng. 129, 130. Literature of the Romantic Period (3, 3). Three hours
a week, first and second semesters. Weber.
- Eng. 134, 135. Literature of the Victorian Period (3, 3). Three hours
a week, first and second semesters. Mooney.
- Eng. 139, 140. The English Novel (3, 3). Three hours a week, first
and second semesters.
- Eng. 143. Modern Poetry (3). First semester. Murphy.
- Eng. 144. Modern Drama (3). First semester. Weber.
- Eng. 145. The Modern Novel (3). Second semester. Cardwell.
- Eng. 148. The Literature of American Democracy (3). First semester.
Cardwell.
- Eng. 150, 151. American Literature to 1900 (3, 3). Three hours a
week, first and second semesters. Manning.
- Eng. 155, 156. Four Major American Writers (3, 3). Three hours a
week throughout the year. Gravely.
- Eng. 170. Creative Writing (2). First semester. Prerequisite, per-
mission of the instructor. R. Fleming.
- Eng 171. Advanced Creative Writing (2). Second semester. Pre-
requisite, permission of the instructor. R. Fleming.

- Eng. 172. Playwriting (2). Second semester. Prerequisite, permission of the instructor. R. Fleming.

FOR GRADUATES

- Eng. 200. Research. Arranged.
- Eng. 201. Bibliography and Methods (3). First semester. Mooney.
- Eng. 202. Middle English (3). First semester. (Not offered in 1947-1948.)
- Eng. 203. Gothic (3). Second semester. (Not offered in 1947-1948.) Harman.
- Eng. 204. Medieval Romance (3). (Not offered in 1947-1948.)
- Eng. 207. Seminar in Renaissance Literature (3). Second semester. MacManaway.
- Eng. 210. Seminar in Seventeenth Century Literature (3). Second semester. Murphy.
- Eng. 212. Seminar in Eighteenth Century Literature (3). Second semester. (Not offered in 1947-1948.)
- Eng. 214. Seminar in Nineteenth Century Literature (3). First semester. Cooley.
- Eng. 216, 217. Literary Criticism (3, 3). Three hours a week, first and second semesters. (Not offered in 1947-1948.)
- Eng. 225, 226. Major American Writers (3, 3). Three hours a week, first and second semesters. Cardwell.
- Eng. 227, 228. Problems in American Literature (3, 3).
- Eng. 230. Studies in American Language (3). (Not offered in 1947-1948.)
- Eng. 257. Problems in Folklore (33). Second semester. Emrich.

ENTOMOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ent. 100. Advanced Apiculture (3). Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, Ent. 4. Abrams.
- Ent. 101. Economic Entomology (3). (Not offered in 1947-1948.) Cory.
- Ent. 103, 104. Insect Pests (3, 3). Two lectures and one three-hour laboratory period a week, first and second semesters. Prerequisite, Ent. 1 or consent of the department. Cory.

- Ent. 105. **Medical Entomology (3)**. Two lectures and one three-hour laboratory period a week, first semester. Prerequisite, Ent. 1 or consent of the department. Cory.
- Ent. 106. **Advanced Insect Taxonomy (3)**. First semester. Two three-hour laboratory periods a week. Prerequisite, Ent. 3. McConnell.
- Ent. 107. **Insecticides (2)**. Second semester. Prerequisites, Ent. 1 and elementary Organic Chemistry. Shephard.
- Ent. 109. **Insect Physiology (2)**. Two lectures and occasional demonstrations, second semester. Prerequisite, consent of the department. Yeager.
- Ent. 110, 111. **Special Problems (1, 1)**. First and second semesters. Prerequisites, to be determined by the department. Cory.
- Ent. 112. **Seminar (1)**. First and second semesters. Cory.
- Ent. 113. **Photomicrography (2)**. Two laboratory periods a week and occasional lectures, first semester. Prerequisite, consent of the department. Chisolm.

FOR GRADUATES

- Ent. 201. **Advanced Entomology**. Credit and prerequisites to be determined by the department. First and second semesters. Cory.
- Ent. 202. **Research**. Cory.
- Ent. 203. **Advanced Insect Morphology (2-4)**. Two lectures a week; additional laboratory work and credit by special arrangement with the department. First semester. Snodgrass.
- Ent. 205. **Insect Ecology (2)**. One lecture and one three-hour laboratory period a week, second semester. Prerequisite, consent of the department. Langford.

FOREIGN LANGUAGES AND LITERATURE

A. French

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- French 100. **French Literature of the Sixteenth Century (3)**. First semester.
- French 101, 102. **French Literature of the Seventeenth Century (3, 3)**. Three hours a week, first and second semesters.
- French 103, 104. **French Literature of the Eighteenth Century (3, 3)**. Three hours a week, first and second semesters. Falls.
- French 105, 106. **French Literature of the Nineteenth Century (3, 3)**. Three hours a week, first and second semesters.

- French 121, 122. Advanced Composition (3, 3).** Three hours a week, first and second semesters. Falls.
- French 161, 162. French Life and Culture (3, 3).** Three hours a week, first and second semesters. Falls.

FOR GRADUATES

The requirements of students will determine which courses will be offered.

- French 201. Research.** Credits determined by work accomplished.
- French 203, 204. Georges Duhamel, Poet, Dramatist, Novelist (2, 2).** Two hours a week, first and second semesters. Falls.
- French 205, 206. French Literature of the Middle Ages (2, 2).** Two hours a week, first and second semesters.
- French 207, 208. The French Novel in the First Half of the Nineteenth Century (2, 2).** Two hours a week, first and second semesters. Falls.
- French 209, 210. The French Novel in the Second Half of the Nineteenth Century (2, 2).** Two hours a week, first and second semesters. Falls.
- French 211. Introduction to Old French (3).** Second semester.
- French 213, 214. Seminar (2, 2).** Two hours a week, first and second semesters. Required of all graduate majors in French.
- French 221, 222. Reading Course (2, 2).** One conference a week, first and second semesters.

B. German

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- German 101, 102. German Literature of the Eighteenth Century (3, 3).** Three hours a week, first and second semesters. Prahl.
- German 103, 104. German Literature of the Nineteenth Century (3, 3).** Three hours a week, first and second semesters. Prahl.
- German 105, 106. Contemporary German Literature (3, 3).** Three hours a week, first and second semesters. Prahl.
- German 107, 108. Goethe's Faust (2, 2).** Two hours a weeks, first and second semesters. Zucker.
Attention is called to Comp. Lit. 106, Romanticism in Germany, and Comp. Lit. 107, The Faust Legend in English and German Literature.
- German 121, 122. Advanced Composition (3, 3).** Three hours a week, first and second semesters. Prerequisites, German 71, 80, or consent of instructor.

German 161, 162. German Life and Culture (3, 3). Three hours a week, first and second semesters. Cunz.

FOR GRADUATES

The requirements of students will determine which courses will be offered.

- German 201. Research. Credits determined by work accomplished.
- German 202, 203. The Modern German Drama (3, 3). Three hours a week, first and second semesters. Zucker
- German 204. Schiller (3). PrahL.
- German 205. Goethe's Works outside of Faust (2). Second semester. Zucker.
- German 206. The Romantic Movement (3). PrahL.
- German 208. The Philosophy of Goethe's Faust (2). First semester. Zucker.
- German 210. Seminar (3, 3). Three hours a week, first and second semesters. Required of all graduate majors in German.
- German 220, 221. Reading Course (2, 2). One conference a week, first and second semesters.
- German 230. Introduction to European Linguistics (3).
- German 231. Middle High German (3).

C. Spanish

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Spanish 101. Epic and Ballad (3). First semester.
- Spanish 104. The Drama of the Golden Age (3). First semester.
- Spanish 105. The Spanish Novel of the Golden Age (3). Second semester.
- Spanish 106. The Poetry of the Golden Age (3). First semester.
- Spanish 107. The Spanish Mystics (3). Second semester.
- Spanish 108. Lope de Vega (3). First semester.
- Spanish 109. Cervantes (3). Second semester.
- Spanish 110. The Poetry of the Nineteenth Century (3). First semester.
- Spanish 111. The Novel of the Nineteenth Century (3). Second semester.

- Spanish 112. The Drama of the Nineteenth Century (3). Second semester.
- Spanish 113. The Novel of the Twentieth Century (3). First semester.
- Spanish 114. The Poetry of the Twentieth Century (3). First semester.
- Spanish 115. Spanish Thought in the Twentieth Century (3). First semester.
- Spanish 116. The Drama of the Twentieth Century (3). Second semester.
- Spanish 121, 122. Advanced Composition (3, 3). Three hours a week, first and second semesters.
- Spanish 151. Latin-American Novel (3). First semester.
- Spanish 152. Latin-American Poetry (3). Second semester.
- Spanish 153. Latin-American Essay (3). First semester.
- Spanish 161, 162. Spanish Life and Culture (3, 3). Three hours a week, first and second semesters.
- Spanish 163, 164. Latin-American Civilization (3, 3). Three hours a week, first and second semesters.

FOR GRADUATES

- Spanish 201. Research. Credits determined by work accomplished.
- Spanish 202. The Golden Age in Spanish Literature (3). First semester.
- Spanish 203, 204. Spanish Poetry (3, 3). Three hours a week, first and second semesters.
- Spanish 210. Seminar. Arranged.
- Spanish 213. Introduction to Old Spanish (3). Second semester.
- Spanish 221, 222. Reading Course. Arranged.

HISTORY

Special Departmental Requirements

Eight to ten hours of the total major course requirements of all candidates for this degree must be acquired in the general field of thesis, i. e., either American or European history.

DOCTOR OF PHILOSOPHY

1. At least thirty hours of the total major course requirements must be acquired in the general field of the thesis, i. e., American history or European history.

2. At least ten hours of the thirty required for a minor in history must be taken at the University of Maryland.

3. Prospective candidates must pass preliminary written and oral examinations covering various fields of their major and minor subjects before admission to candidacy. Consult the head of the department for details.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

A. American History

H. 5, 6, or equivalents are prerequisites for courses H. 101 to H. 142 inclusive.

- H. 101. American Colonial History (3). First semester. McAnear.
- H. 102. The American Revolution (3). Second semester. McAnear.
- H. 105, 106. Social and Economic History of the United States to 1860 (3, 3). Three hours a week, first and second semesters. (Not offered in 1947-1948.) Chatelain.
- H. 107. Social and Economic History of the United States, 1860-1900 (3). First semester. Chatelain.
- H. 108. The United States in the Twentieth Century (3). Second semester. Merrill.
- H. 115. The Old South (3). First semester. Merrill.
- H. 116. The Civil War and Reconstruction (3). Second semester. Merrill.
- H. 121, 122. History of the American Frontier (3, 3). Three hours a week, first and second semesters. Gewehr.
- H. 127, 128. Diplomatic History of the United States (3, 3). Three hours a week, first and second semesters. Wellborn.
- H. 129. The United States and World Affairs (3). First semester. Wellborn.
- H. 133, 134. The History of American Ideas (3, 3). Three hours a week, first and second semesters.
- H. 135, 136. Constitutional History of the United States (3, 3). Three hours a week, first and second semesters. Gewehr.
- H. 141, 142. History of Maryland (3, 3). Three hours a week, first and second semesters. (Not offered in 1947-1948.)
- H. 145, 146. Latin-American History (3, 3). Three hours a week, first and second semesters. Crosman.
- H. 147. History of Mexico (3). First semester. Crosman.

B. European History

- H. 151. History of the Ancient Orient and Greece (3). First semester. Jashemski.
- H. 153. History of Rome (3). Second semester. Jashemski.
- H. 155. Medieval Civilization (3). First semester. Prerequisites, H. 1, 2, or equivalent. Jashemski.
- H. 161. Renaissance and Reformation (3). Second semester. Prerequisites, H. 1, 2, or equivalent. Jashemski.
- H. 166. Revolutionary and Napoleonic Europe (3). Second semester. Prerequisites, H. 1, 2, or equivalent. Bauer.
- H. 171, 172. Europe in the Nineteenth Century, 1815-1919 (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or equivalent. (Not offered in 1947-1948.) Bauer.
- H. 175, 176. Europe in the World Setting of the Twentieth Century (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or equivalent. Bauer.
- H. 179, 180. Diplomatic History of Europe Since 1871 (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or equivalent. (Not offered in 1947-1948.) Prange.
- H. 181, 182. History of Central Europe (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or equivalent. (Not offered in 1947-1948.) Prange.
- H. 185, 186. History of the British Empire (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or 3, 4, or equivalent. Gordon.
- H. 191. History of Russia (3). First semester. Prerequisites, H. 1, 2, or equivalent. Bauer.
- H. 193. History of the Near East (3). First semester. Prerequisites, H. 1, 2, or equivalent. (Not offered in 1947-1948.) Gewehr.
- H. 195. The Far East (3). Second semester. (Not offered in 1947-1948.) Gewehr.
- H. 199. Proseminar in Historical Writing (3). Second semester. Staff.

FOR GRADUATES

- H. 200. Research (3-6). Credit apportioned to amount of research. First and second semesters. Staff.
- H. 201. Seminar in American History (3). First and second semesters. Chatelain.
- H. 205, 206. Topics in American Economic and Social History (3, 3). Arranged. First and second semesters. Chatelain.

- H. 208. Topics in Recent American History (3). First and second semesters. Merrill.
- H. 211. The Colonial Period in American History (3). Arranged. First semester. McAnear.
- H. 212. Period of the American Revolution (3). Arranged. Second semester. McAnear.
- H. 215. The Old South (3). (Not offered in 1947-1948.)
- H. 216. The American Civil War (3). (Not offered in 1947-1948.)
- H. 221, 222. History of the West (3, 3). (Not offered 1947-1948.)
Gewehr.
- H. 233, 234. Topics in American Intellectual History (3, 3). (Not offered in 1947-1948.)
- H. 235, 236. Problems in American Constitutional History (3, 3). Arranged. First and second semesters. Gewehr.
- H. 250. Seminar in European History (3). First and second semesters. Staff.
- H. 255. Medieval Culture and Society (3). (Not offered in 1947-1948.)
- H. 281. Topics in the History of Central Europe (3). (Not offered in 1947-1948.)
- H. 285, 286. Topics in the History of Modern England and Great Britain (3, 3). Three hours a week, first and second semesters. (Not offered in 1947-1948.)
- H. 287. Historians and Historical Criticism (3). Staff.

HOME ECONOMICS

A. Textiles and Clothing

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Tex. 101. Problems in Textiles (4). One lecture and three laboratory periods a week, first semester. Prerequisites, Tex. 100; Organic Chemistry.
- Tex. 105. Consumer Problems in Textiles (3). Two lectures and one laboratory period a week, second semester. Prerequisite, Tex. 1, or equivalent. Akin.
- Clo. 120. Draping (3). Three laboratory periods a week, first and second semesters. Prerequisites, Tex. 1; Clo. 20, or equivalent.
- Clo. 121. Pattern Design (2). Two laboratory periods a week, second semester. Prerequisite, Clo. 20A or 20B, or equivalent.

- Clo. 122. Tailoring (2).** Two laboratory periods a week, first semester. Prerequisite, Clo. 20A or 20B, or equivalent. Mitchell.
- Clo. 123. Children's Clothing (2).** One lecture and one laboratory period a week, first semester. Prerequisites, Tex. 1; Clo. 20A or 20B, or equivalent.
- Clo. 124. Projects and Readings in Textiles and Clothing (2).** Second semester. McFarland.

FOR GRADUATES

- Tex. 200. Special Studies in Textiles (2-4).** (Not offered in 1947-1948.)
- Clo. 220. Special Studies in Clothing (2-4).** First and second semesters.
- Tex. and Clo. 230. Seminar (1).** First and second semesters.
- Tex. and Clo. 231. Research.**

B. Practical Art and Crafts

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Pr. Art 100, 101. Mural Design (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art. 1, 2, 3, 21, and consent of the instructor. Cuneo.
- Pr. Art. 102, 103. Advanced Mural Design (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art. 1, 2, 3, 21, 100, 101. Cuneo.
- Pr. Art 120, 121. Costume Illustration (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art. 1, 20, 21, 22, and consent of instructor. Cassels.
- Pr. Art. 124, 125. Individual Problems in Costume (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art. 1, 20, 120, 121, and consent of instructor. Cassels.
- Pr. Art 132. Advertising Layout (2).** First semester. Prerequisites, Pr. Art 1, 20, 21, 22, 30, and consent of instructor. Cuneo.
- Pr. Art 134, 135. Individual Problems in Advertising (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 30, 120, 132, or equivalent, and consent of instructor. Cuneo.
- Pr. Art 136. Merchandise Display (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 30, 120, 132 to precede or parallel. Curtiss.
- Pr. Art 137. Advanced Merchandise Display (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 30, 120, 132, 136, and consent of instructor. Curtiss.

- Pr. Art 138, 139. **Advanced Photography (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 38, 39. Cuneo.
- Pr. Art. 140, 141. **Interior Design (1, 3)**. One laboratory period a week, first semester; three laboratory periods a week, second semester. Prerequisite, Pr. Art 1 and Pr. Art 2. Brown.
- Pr. Art. 142, 143. **Advanced Interior Design (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 140, 141, or equivalent. Brown.
- Pr. Art. 144, 145. **Individual Problems in Interior Design (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 140, 141, 142, 143, and consent of instructor. Brown.
- Cr. 120, 121. **Advanced Ceramics (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 20, 21. Lawson.
- Cr. 124, 125. **Individual Problems in Ceramics (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 20, 21, 120, 121, and consent of instructor. Lawson.
- Cr. 130, 131. **Advanced Metalry (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 30, 31. Lawson.
- Cr. 134, 135. **Individual Problems in Metalry (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 30, 31, 130, 131, and consent of instructor. Lawson.
- Cr. 140, 141. **Advanced Weaving (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 40, 41. Lawson.
- Cr. 144, 145. **Individual Problems in Weaving (2, 2)**. Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 40, 41, 140, 141, and consent of instructor. Lawson.
- Cr. 198. **Crafts in Therapy (2)**. Second semester. Prerequisites, three courses in various crafts or art construction and consent of instructor. Curtiss.

C. Home and Institution Management

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Home Mgt. 150, 151. Mangement of Home (3, 3)**. Three hours a week, first and second semesters.
- Home Mgt. 152. Practice in Management of Home (3)**. First and second semesters. Prerequisites, Home Mgt. 150, 151. Crow.

- Inst. Mgt. 160. Institution Organization and Management (3).** Two lectures and one laboratory period a week, first semester. Prerequisites, Foods 1, 3; Nut. 110; Home Mgt. 150, 151.
- Inst. Mgt. 161. Institution Purchasing and Accounting (3).** Two lectures and one laboratory period a week, second semester. Prerequisite, Inst. Mgt. 160.
- Inst. Mgt. 162. Institution Foods (3).** One lecture and two laboratory periods a week, second semester. Prerequisites, Inst. Mgt. 160, 161.
- Inst. Mgt. 164. Advanced Institution Management (2).** One lecture and one laboratory period a week, second semester. Prerequisites, Inst. Mgt. 160, 161, 162.
- Inst. Mgt. 165. School Lunch (3).** Two lectures and one laboratory period a week, second semester and summer session. Prerequisites, Foods 1, 3; Nut. 110, or equivalent.

D. Foods and Nutrition

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Foods 100. Food Economics (2).** One lecture and one laboratory period a week, first semester. Prerequisite, Foods 1 or 3. LeGrand.
- Foods 101. Meal Service (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Foods 1 or 3. Sesson.
- Foods 102. Experimental Foods (3).** One lecture and two laboratory periods a week, first semester. Prerequisites, Foods, 3, 100, 101; Organic Chemistry. Taylor.
- Foods 103. Demonstrations (2).** Two laboratory periods a week, second semester. Prerequisites, Tex. 1, Clo. 20; Pr. Art. 20; Foods 1 or 3. Devore.
- Foods 104. Advanced Foods (2).** Two laboratory periods a week, second semester. Prerequisite, Foods 1 or 3. Devore.
- Foods 105. Foods of Other Countries (3).** One lecture and two laboratory periods a week, second semester. Prerequisite, Foods 1 or 3, or equivalent. Taylor.
- Nut. 110. Nutriton (3).** First semester. Prerequisites, Foods 3; Organic chemistry. LeGrand.
- Nut. 111. Child Nutriton (2).** One lecture and one laboratory period a week, second semester. Prerequisite, Foods 1 or 3; Nut. 110 or 10. LeGrand.
- Nut. 112. Dietetics (3).** One lecture and two laboratory periods a week, first semester. Prerequisite, Nut. 110. LeGrand.
- Nut. 113. Diet in Disease (2).** Two periods a week, first semester. Prerequisite, Nut. 110. Ragel.

FOR GRADUATES

- Foods 200. Advanced Experimental Foods (3-5). Second semester.
 Nut. 210. Readings in Nutrition (3). First semester.
 Nut. 211. Problems in Nutrition (3-5). Second semester.
 Nut. 212. Nutrition for Community Service (3). Second semester.
 Foods and Nut. 220. Seminar (1). First and second semesters.
 Foods and Nut. 221. Research.

E. Home Economics Extension

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- H. E. Ext. 100. Methods in Home Economics Extension (3). Second semester.

HORTICULTURE

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Hort. 101, 102. Technology of Horticultural Plants—Fruits (2, 2). Two hours a week, first and second semesters. Prerequisite, Bot. 101.
 Haut.
 Hort. 103, 104. Technology of Horticultural Plants—Vegetables (2, 2). Two hours a week, first and second semesters. Prerequisite, Bot. 101.
 Hort. 105. Technology of Horticultural Plants—Ornamentals (2). Two hours a week, first or second semesters. Prerequisite, Bot. 101.
 Haut.
 Hort. 106. World Fruits and Nuts (2). Second semester. Haut.
 Hort. 107. Plant Materials (3). One lecture and two laboratory periods a week, first semester.
 Hort. 108. Plant Materials (2). One lecture and one laboratory period a week, second semester.
 Hort. 112. Canning Crops Technology (3). Two lectures and one laboratory period a week, first semester. Given in alternate years. Prerequisites, Hort. 55; Bot. 101. Walls.
 Hort. 114. Systematic Pomology (3). Two lectures and one laboratory period a week, first semester. Given in alternate years. Haut.
 Hort. 116. Systematic Olericulture (3). Two lectures and one laboratory period a week, first semester. Given in alternate years. Walls.

FOR GRADUATES

- Hort. 201, 202. Experimental Pomology (3, 3). Three hours a week, first and second semesters. Prerequisite, Bot. 101. Schrader.
 Hort. 203, 204. Experimental Olericulture (2, 2). Two hours a week, first and second semesters. Prerequisite, Bot. 101.

- Hort. 205. Experimental Pomology (3).** Second semester. (This is a continuation of Hort. 201, 202.) Schrader.
- Hort. 206. Horticultural Cyto-genetics (3).** Second semester. Prerequisites, Zool. 120; Bot. 101, Bot. 201, or equivalents.
- Hort. 207. Methods of Horticultural Research (3).** One lecture and two laboratory periods a week, second semester. Scott.
- Hort. 208. Research.** Credit according to work done. Staff.
- Hort. 209. Advanced Seminar (1).** One lecture a week, first and second semesters. Staff.

MATHEMATICS

Special Departmental Requirements

MASTER OF ARTS

Before a candidate will be recommended for admission to candidacy the candidate will be required to:

1. Demonstrate a reading knowledge of a foreign language of scientific importance. The rules governing language examinations will be found on page 14.
2. Pass a preliminary examination. The examination covers the candidate's mastery of undergraduate and graduate studies in both major and minor fields. Ordinarily only one re-examination, to be held not before a semester has lapsed, may be given.

DOCTOR OF PHILOSOPHY

Before submitting himself for the preliminary examination required for admission to candidacy the student is expected to have acquired a background of mathematical knowledge represented by the following group of graduate studies: Analysis, four semesters; Algebra, two semesters; Geometry or Topology, two semesters; Applied Mathematics or Physics, two semesters.

A. Algebra

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Math. 100, 101. Higher Algebra (3, 3).** Three hours a week. Prerequisites, Math. 20, 21, or equivalent.
- Math. 102. Theory of Equations (3).** First semester. Prerequisites, Math. 20, 21, or equivalent. Good.
- Math. 103. Introduction to Modern Algebra (3).** Second semester. Prerequisites, Math. 20, 21, or equivalent. Good.

FOR GRADUATES

- Math. 200, 201. Modern Algebra (3, 3).** Three hours a week. Prerequisite, Math. 103, or consent of instructor. Not offered in 1947-1948. Good.

Math. 202. Matrix Theory (3). Second semester. Prerequisite, Math. 103, or consent of instructor.

Math. 271. Selected Topics in Algebra (3). Arranged. Good.

B. Analysis

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Math. 110, 111. Advanced Calculus (3, 3). Three hours a week, first and second semesters. Prerequisites, Math. 20, 21, or equivalent. (Not offered in 1946-1947.)

Math. 114, 115. Differential Equations (3, 3). First and second semesters. Three hours a week. Prerequisites, Math. 20, 21, or equivalent. Lewis.

Math. 116. Introduction to Complex Variable Theory (3)* First semester. Prerequisites, Math. 20, 21, or equivalent. Open to students of engineering and the physical sciences. Graduate students of mathematics should enroll in Math. 210, 211. (Not offered in 1947-1948.)

FOR GRADUATES

Math. 210, 211. Functions of a Complex Variable (3, 3). Three hours a week, first and second semesters. Prerequisite, advanced calculus. Ringenberg.

Math. 213, 214. Functions of a Real Variable (3, 3). Prerequisite, advanced calculus. (Not offered in 1947-1948.) Ringenberg.

Math. 215, 216. Analysis (3, 3). Three hours a week, first and second semesters. Prerequisite, advanced calculus and a course in complex variable theory. (Not offered in 1947-1948.)

Math. 272. Selected Topics in Analysis (3). Arranged.

C. Geometry and Topology

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Math. 124, 125. Introduction to Projective Geometry (3, 3). Three hours a week. Prerequisites, Math. 20, 21, or equivalent. (Not offered 1947-1948.) Jackson.

Math. 126. Introduction to Differential Geometry (3). First semester. Prerequisites, Math. 20, 21, or equivalent. Vanderslice.

Math. 128, 129. Higher Geometry (3, 3.) Three hours a week, first and second semesters. Prerequisite, two years of college mathematics.

FOR GRADUATES

Math. 220, 221. Differential Geometry (3, 3.) Prerequisite, Math. 126, or equivalent. (Not offered 1947-1948.) Jackson.

- Math. 222. Foundations of Geometry (3).** First semester. Prerequisite, Math. 124 or consent of instructor. Jackson.
- Math. 223, 224. Topology (3, 3).** Three hours a week. Prerequisite, advanced calculus. (Not offered 1947-1948). Hall.
- Math. 225, 226. Set-theoretic Topology (3, 3).** First and second semesters. Prerequisite, advanced calculus. Hall.
- Math. 227. Tensor Analysis (3).** Second semester. Prerequisites, advanced calculus and differential equations. Vanderslice.
- Math. 273. Selected Topics in Geometry and Topology (3).** Arranged.

D. Applied Mathematics

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Math. 130, 131. Analytic Mechanics (3, 3).** Prerequisites, Math. 20, 21, or equivalent. (Not offered in 1947-1948).
- Math. 132, 133. Advanced Mathematics for Engineers and Physicists (3, 3).** Three hours a week, first and second semesters. Prerequisite, Math. 64, or equivalent. Martin.
- Math. 134. Vector Analysis (3).** Prerequisite, Math. 20, 21, or equivalent. (Not offered in 1947-1948.) Vanderslice.
- Math. 139. Operational Calculus (3).** First semester. Prerequisite, Math. 64, or equivalent. Intended for students of engineering and physics. (Not offered in 1947-1948.) Vanderslice.

FOR GRADUATES

- Math. 230, 231. Applied Mathematics (3, 3).** Three hours a week, first and second semesters. Prerequisite, advanced calculus and differential equations. (Not offered in 1947-1948.) Lewis.
- Math. 232. Partial Differential Equations of Mathematical Physics (3).** First semester. Prerequisites, advanced calculus and differential equations. Lewis.
- Math. 233. Non-linear Mechanics (3).** Second semester. Prerequisites, advanced calculus and consent of instructor. Lewis
- Math. 274. Selected Topics in Applied Mathematics (2).** Arranged.

E. Statistics

- Math. 150, 151. Probability (3, 3).** Prerequisite, differential and integral calculus. (Not offered in 1947-1948).
- Math. 152, 153. Mathematical Statistics (2, 2).** First and second semesters. Prerequisite, differential and integral calculus.

F. Colloquium and Research

FOR GRADUATES

- Math. 290. Colloquium.** First and second semesters.
- Math. 300. Research.** Arranged.

PHYSICS

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Phys. 100. **Advanced Experiments (3)**. One lecture and two laboratory periods a week, first and second semesters. Prerequisites, Phys. 11 or 21; Math. 21. Staff.
- Phys. 102. **Optics (5)**. Three lectures and two laboratory periods a week, first semester. Prerequisites, Phys. 11 or 21; Math. 21. Cooper.
- Phys. 104, 105. **Electricity and Magnetism (5, 5)**. Three lectures and two laboratory periods a week, second and first semesters. Prerequisites, Phys. 11 or 21; Math. 21. Cooper.
- Phys. 106, 107. **Theoretical Mechanics (3, 3)**. Two lectures a week, first and second semesters. Prerequisites, Phys. 11 or 21; Math. 21. Morgan.
- Phys. 112. **Modern Physics (4)**. Three lectures and one laboratory period a week, second semester. Prerequisite, advanced standing in physics and mathematics. Iskraut.

FOR GRADUATES

- Phys. 200, 201. **Introduction to Theoretical Physics (5, 5)**. Five lectures a week, first and second semesters. Myers.
- Phys. 202, 203. **Advanced Dynamics (2, 2)**. Two lectures a week. Prerequisite, Phys. 200. (Not offered in 1947-1948.)
- Phys. 204. **Electrodynamics (4)**. Four lectures a week. Prerequisite, Phys. 201. Myers.
- Phys. 206. **Physical Optics (3)**. Prerequisite, Phys. 201. Myers.
- Phys. 208, 209. **Thermodynamics (2, 2)**. Prerequisite Phys. 201 or equivalent. Cooper.
- Phys. 210, 211. **Statistical Mechanics and the Kinetic Theory of Gases (2, 2)**. Two lectures a week. Prerequisites, Phys. 112 and 201.
- Phys. 212, 213. **Introduction to Quantum Mechanics (2, 2)**. Two lectures a week, first and second semesters. Prerequisite, Phys. 201. Brickwedde.
- Phys. 214, 215. **Theory of Atomic Structure and Spectral Lines (2, 2)**. Two lectures a week. Prerequisite, Phys. 213. McMillen.
- Phys. 216, 217. **Molecular Structure (2, 2)**. Two lectures a week. Prerequisite, Phys. 213. (Not offered in 1947-1948.) Brickwedde.
- Phys. 218, 219. **X-Rays and Crystal Structure (3, 3)**. Three lectures a week, first and second semesters. (Not offered in 1947-1948.) Morgan.

- Phys. 220. Application of X-Ray and Electron Diffraction Methods (2).
Two laboratory periods a week. (Not offered in 1947-1948.)
Morgan.
- Phys. 222, 223. Boundary-Value Problems of Theoretical Physics (2, 2).
Prerequisite, Phys. 201. (Not offered in 1947-1948.)
- Phys. 224, 225. Supersonic Aerodynamics and Compressible Flow
(2, 2). Prerequisite, Phys. 201. (Not offered in 1947-1948.)
- Phys. 226, 227. Theoretical Hydrodynamics (3, 3). Prerequisite, ele-
mentary hydrodynamics. Kennard.
- Phys. 230. Seminar (1). First and second semesters.
- Phys. 232, 233. Hydromechanics Seminar (1, 1). (Not offered in 1947-
1948.) Kennard.
- Phys. 250. Research. Credit according to work done.
- Phys. 228, 229. The Electron (2, 2). Prerequisites, Phys. 204 and Phys.
213. (Not offered in 1947-1948.) Johnson.
- Phys. 234, 235. Nuclear Physics (2, 2). Prerequisite, Phys. 213.
Johnson.
- Phys. 236. Theory of Relativity (3). Prerequisite, Phys. 200.
Iskraut.
- Phys. 238. Quantum Theory—selected topics (3). Prerequisite, Phys.
236. Iskraut.
- Phys. 240, 241. Theory of Sound and Vibrations (2, 2). Prerequisite,
Phys. 201. McMillen.

POULTRY HUSBANDRY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- P. H. 104. Poultry Marketing Problems (2). Two lectures, demonstra-
tion and quiz periods a week, first semester. Gwin.
- P. H. 105. Egg Marketing Problems (2). Two lectures, demonstration
and quiz periods a week, second semester. Gwin.
- P. H. 107. Poultry Industrial and Economic Problems (2). First semes-
ter. Staff.
- P. H. 108. Special Poultry Problems (1-2). Assigned problems, first
and second semesters. Staff.
- Poultry Hygiene. See V. S. 107.
- Avian Anatomy. See V. S. 108.
- Preservation of Poultry Products. See F. Tech 108.

FOR GRADUATES

- P. H. 201. Advanced Poultry Genetics (3). First semester. Prerequisite, P. H. 51 or equivalent. Jull.
- P. H. 202. Advanced Poultry Nutrition (3). Two lectures and one laboratory period a week, second semester. Prerequisite, P. H. 52, or equivalent. Briggs.
- P. H. 203. Physiology of Reproduction of Poultry (3). Two lectures and one laboratory period a week, first semester. Prerequisite, P. H. 56, or equivalent. Hess.
- P. H. 204. Poultry Seminar (1). First and second semesters. Staff.
- P. H. 205. Poultry Literature (1-4). First and second semesters. Staff.
- P. H. 206. Poultry Research. Credit in accordance with work done. Staff.
- P. H. 207. Poultry Research Techniques (3). First semester. Staff.

PSYCHOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Graduate credit will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

- Psych. 106. Statistical Methods in Psychology (3). First semester. Hackman.
- Psych. 110. Educational Psychology (3). First and second semesters. Sanford.
- Psych. 121. Social Psychology (3). First semester. Sanford.
- Psych. 125. Child Psychology (3). First semester. Schaefer.
- Psych. 126. Developmental Psychology (3). Second semester. Schaefer.
- Psych. 127. Psychology of Early Man (3). Second semester. Sprowls.
- Psych. 128. Human Motivation (3). First semester.
- Psych. 130. Mental Hygiene (3). First and second semesters. Sprowls.
- Psych. 131. Abnormal Psychology (3). Second semester. Sprowls.
- Psych. 132. Psychological Aspects of Clinical Practice (3). Second semester.
- Psych. 140. Psychological Problems in Advertising (3). First semester.
- Psych. 142. Techniques of Interrogation (3). Second semester. Hackman.

- Psych. 150. Tests and Measurements (3). First semester. Smith.
- Psych. 155. Psychological Techniques in Vocational Counseling (3).
Second semester. Smith.
- Psych. 161. Psychological Techniques in Personnel Administration (3).
Second semester. Jenkins.
- Psych. 167. Psychological Problems in Aviation (3). Second semester.
- Psych. 191, 192. General Experimental Psychology (3, 3). First and
second semesters. Hackman.
- Psych. 194. Independent Study in Psychotechnology (3). First and sec-
ond semesters. Staff.
- Psych. 195. Minor Problems in Psychotechnology (3). First and sec-
ond semesters. Staff.
- Psych. 197, 198. Proseminar: Current Research in Psychotechnology
(3). First and second semesters. Jenkins.

FOR GRADUATES

The instructional areas listed below imply active participation on the part of every candidate for an advanced degree. Practicum instruction is offered in combination with adequate theoretical and methodological grounding in each area.

- Psych. 200. Sources of Information; Preparation of Reports (3). First
semester. Jenkins.
- Psych. 203, 204 Seminar: Review of Current Technological Researches
(3, 3). First and second semesters. Jenkins.
- Psych. 210. Occupational Information (3). Second semester. Pre-
requisite, Psych. 150.
- Psych. 211. Job Analysis and Description (3). First semester. Pre-
requisite, Psych. 210.
- Psych. 220, 221. Counseling Techniques (3, 3). First and second semes-
ters. Prerequisite, Psych. 210. Smith.
- Psych. 222. Rehabilitation Techniques (3). Second semester. Pre-
requisite, Psych. 220. Sanford.
- Psych. 223. Diagnosis and Correction of Reading Difficulties (3). First
semester. Prerequisite, Psych. 221.
- Psych. 224. Counseling for Marital Problems (3). Second semester.
Prerequisite, Psych. 221. Sanford.
- Psych. 225. Participation in Counseling Clinic (3). First semester.
Prerequisites, Psych. 221. Smith.

- Psych. 230. **Determinants of Human Efficiency (3)**. Second semester. Prerequisite, Psych. 128. Jenkins.
- Psych. 231. **Training Procedures in Industry (3)**. First semester. Prerequisite, Psych. 230. Sanford.
- Psych. 233. **Social Organization in Industry (3)**. First semester. Prerequisite, Psych. 230. Jenkins.
- Psych. 234. **Motivation in Industry (3)**. Second semester. Prerequisite, Psych. 233. Jenkins.
- Psych. 240. **Interview and Questionnaire Techniques (3)**. Second semester. Prerequisite, Psych. 150. Sanford.
- Psych. 241. **Controlled Publicity (3)**. First semester. Prerequisite, Consent of instructor. Hackman.
- Psych. 242. **Measurement of Group Reaction (3)**. Second semester. Prerequisite, Psych. 241. Hackman.
- Psych. 250, 251. **Development and Validation of Predictors (3, 3)**. First and second semesters. Prerequisite, Psych. 150. Schaefer.
- Psych. 252, 253. **Advanced Statistics (3, 3)**. First and second semesters. Prerequisite, Psych. 106. Hackman.
- Psych. 254. **Criteria: Standards for Appraisal of Performance (3)**. First semester. Prerequisite, Psych. 150. Jenkins.
- Psych. 260, 261. **Individual Tests (3, 3)**. First and second semesters. Laboratory fee, \$4.00. Prerequisite, Psych. 150.
- Psych. 262. **Appraisal Personality (3)**. First semester. Prerequisite, Psych. 150. Sanford.
- Psych. 263. **Appraisal of Interests (3)**. Second semester. Prerequisite, Psych. 262. Schaefer.
- Psych. 264, 265. **Projective Tests (3, 3)**. First and second semesters. Laboratory fee, \$4.00. Prerequisite, Psych. 261.
- Psych. 270. **Advanced Abnormal Psychology (3)**. First semester. Prerequisite, Psych. 131. Schaefer.
- Psych. 271. **Special Testing of Disabilities (3)**. Second semester. Prerequisite, Psych. 270.
- Psych. 272, 273. **Individual Clinical Diagnosis (3, 3)**. First and second semesters. Prerequisite, Psych. 261.
- Psych. 274. **Individual Therapy (3)**. First semester. Prerequisite, Psych. 261. Schaefer.
- Psych. 275. **Group Therapy (3)**. Second semester. Prerequisite, Psych. 274. Sanford.

- Psych. 276, 277. **Field Work in Clinical Psychology (3, 3)**. First and second semesters. Prerequisite, consent of instructor.
- Psych. 278. **Seminar in Clinical Psychology for Teachers (3)**. First semester. Prerequisite, consent of instructor. Sprowls.
- Psych. 280. **Physiological Psychology (3)**. Second semester. Prerequisite, consent of instructor.
- Psych. 290, 291. **Research for Thesis (3, 3)**. First and second semesters. Staff.

SOCIOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Soc. 113. **The Rural Community (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Hoffsommer.
- Soc. 114. **The City (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Houser.
- Soc. 115. **Industrial Sociology (3)**. Second semester. Prerequisites, Soc. 1 and junior standing. Imse.
- Soc. 118. **Community Organizations (3)**. Second semester. Prerequisites Soc. 1 or its equivalent and junior standing. Shankweiler.
- Soc. 121, 122. **Population (3)**. Three hours a week, first and second semesters. Prerequisites, Soc. 1 or its equivalent and junior standing. Baker.
- Soc. 123. **Ethnic Minorities (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Ebersole.
- Soc. 124. **The Culture of the American Indian (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Hutchinson.
- Soc. 131. **Introduction to Social Service (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. L. Houser.
- Soc. 141. **Sociology of Personality (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Ebersole.
- Soc. 144. **Collective Behavior (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Ebersole.
- Soc. 145. **Social Control (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Ebersole.
- Soc. 147. **Sociology of Law (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Lejins.
- Soc. 153. **Juvenile Delinquency (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Lejins.

- Soc. 154. **Crime and Delinquency Control (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing.
- Soc. 156. **Institutional Treatment of Criminals and Delinquents (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Lejins.
- Soc. 171. **Family and Child Welfare (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Shankweiler.
- Soc. 173. **Social Security (3)**. First semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Hutchinson.
- Soc. 174. **Public Welfare (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing.
- Soc. 183. **Social Statistics (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Imse.
- Soc. 186. **Sociological Theory (3)**. Second semester. Prerequisites, Soc. 1 or its equivalent and junior standing. Fleming.

FOR GRADUATES

- Soc. 201. **Social Research (3)**. First Semester. Hoffsommer.
- Soc. 215. **Community Studies (3)**. First semester. Hoffsommer.
- Soc. 221. **Population and Society (3)**. Second semester. Staff.
- Soc. 224. **Race and Culture (3)**. Second semester. Staff.
- Soc. 241. **Personality and Social Structure (3)**. Second semester. Staff.
- Soc. 246. **Public Opinion and Propaganda (3)**. Second semester. Staff.
- Soc. 253. **Advanced Criminology (3)**. First semester. Lejins.
- Soc. 255. **Seminar: Juvenile Delinquency (3)**. First semester. Lejins.
- Soc. 257. **Social Change and Social Policy (3)**. First semester. Staff.
- Soc. 262. **Family Studies (3)**. Second semester. Shankweiler.
- Soc. 282. **Sociological Methodology (3)**. Second semester. Staff.
- Soc. 285. **Seminar: Sociological Theory (3)**. First semester. Fleming.
- Soc. 291. **Research**. Credit to be determined. Staff.
- Soc. 292. **Special Social Problems**. First and second semester. Credit to be determined. Staff.

SPEECH

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Speech 101. Radio speech (3). First semester. Prerequisite, Speech 4.
Ehrensberger.
- Speech 102. Radio Production (3). Second semester. Consent of in-
structor. Ehrensberger.
Ehrensberger.
- Speech 103, 104. Speech Composition and Rhetoric (3, 3). First and
second semesters. Ehrensberger.
- Speech 105. Pathology (3). First semester.
- Speech 106. Clinic (3). Second semester. Prerequisite, Speech 105.
- Speech 107. Advanced Oral Interpretation (3). Second semester. Pre-
requisite, Speech 13.
- Speech 110. Teacher Problems in Speech (3). Second semester. For
students who intend to teach.
- Speech 111. Seminar (3). Second semester.
- Speech 112. Phonetics (3). Second semester.
- Speech 113. Play Production (3). Second semester.
- Speech 114. Costuming (3). First semester. One lecture and two lab-
oratories a week.
- Speech 115. Radio in Retailing (3). First semester. Prerequisites,
Speech 1, 2; English, 1. 2.
- Speech 116. Radio Announcing (3). Second semester. Prerequisite,
Speech 101.

VETERINARY SCIENCE

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- V. S. 101. Comparative Anatomy (3). Two lectures and one laboratory
period a week, first semester. Coffin.
- V. S. 102. Animal Hygiene (3). Two lectures and one laboratory
period a week, second semester. Coffin.
- V. S. 108. Avian Anatomy (3). Two lectures and one laboratory period
a week, first semester. DeVolt.
- V. S. 107. Poultry Hygiene (3). Two lectures and one laboratory
period a week, second semester. DeVolt.

FOR GRADUATES

- V. S. 201. Animal Disease Problems (2-6). Arranged. Staff.
- V. S. 202. Animal Disease Research. Arranged. Staff.

ZOOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Zool. 101. **Mammalian Anatomy (3)**. Three laboratory periods a week, first semester. Werner.
- Zool. 102. **General Animal Physiology (4)**. Two lectures and two laboratory periods a week. Second semester.. Prerequisites, one year of Chemistry, one course in Zoology. Phillips.
- Zool. 104. **Genetics (3)**. First semester. Prerequisite, one course in Zoology or Botany. Burhoe.
- Zool. 108. **Vertebrate Histology (4)**. Two lecture and two laboratory periods a week, first semester. Prerequisite, one year of Zoology. Werner.
- Zool. 110. **Parasitology (3)**. Two lectures and one laboratory period a week. Prerequisite, one year of Zoology.
- Zool. 121. **Principles of Animal Ecology (3)**. Two lectures and one laboratory period a week, second semester. Prerequisites, one course in Zoology and one course in Chemistry. Littleford.
- Zool. 125. **Fisheries Biology (3)**. Two lectures and one laboratory period a week, first semester. Prerequisite, Zool. 5, 102, 103.
- Zool. 130. **Aviation Physiology (3)**. Three lectures a second semester prerequisite permission of the instructor.

FOR GRADUATES

- Zool. 200. **Ichthyology and Marine Zoology (3)**. Two lectures and one laboratory period a week, first semester. Littleford.
- Zool. 201. **Microscopical Anatomy (4)**. Two lectures and two laboratory periods a week, second semester. Werner.
- Zool. 202. **Animal Cytology (4)**. Two lectures and two laboratory periods a week, first semester. Littleford.
- Zool. 203. **Advanced Embryology (4)**. Two lectures and two laboratory periods a week, second semester. Burhoe.
- Zool. 204. **Advanced Animal Physiology (4)**. Two lectures and two laboratory periods a week, first semester. Phillips.
- Zool. 205. **Hydrobiology (4)**. Two lectures and two laboratory periods a week, second semester. Littleford.
- Zool. 206. **Research**. Credit to be arranged. Staff.
- Zool. 207. **Seminar (1)**. First and second semesters. Staff.
- Zool. 208. **Special Problems in General Physiology**. Hours and credits arranged. Second semester. Phillips.
- Zool. 220. **Advanced Genetics (3)**. Two lectures and one laboratory period a week, second semester. Prerequisite, Zool. 104. Burhoe.

GRADUATE COURSES IN THE PROFESSIONAL SCHOOLS AT BALTIMORE

The academic calendars and fees of the professional schools in Baltimore will be found in the separate catalogues published by these schools.

SCHOOL OF MEDICINE

ANATOMY

Minors

- Anat. 101. **Human Gross Anatomy (10).** Total number of hours, approximately 350. Six conferences and lectures, eighteen laboratory hours per week throughout the first semester of every medical school year. Uhlenhuth, Figge, Smith, Krahl.
- Anat. 102. **Mammalian Histology (6).** Two lectures, ten laboratory hours per week, throughout the first semester of every medical school year. Davis, Lutz, Harne.
- Anat. 103. **Human Neurology (4).** Three lectures and six laboratory hours per week for ten weeks of the second semester of every medical school year. Prerequisite, Anat. 102, or equivalent. Davis, Lutz, Harne.

Majors

- Anat. 201. **Human Gross Anatomy.** Number of credits by arrangement. Same course as Anat. 101, but with additional work of a more advanced nature. Uhlenhuth, Figge, Smith.
- Anat. 202. **Mammalian Histology.** Number of credits by arrangement. Same course as Anat. 102, but with additional work of a more advanced nature. Davis, Harne.
- Anat. 203. **Human Neurology.** Number of credits by arrangement. Same course as Anat. 103, but with additional work of a more advanced nature. Prerequisite, Anat. 102 or 202.
- Anat. 204. **Research in Embryology, Histology or Neuro-Anatomy.** Credit by arrangement. Open to students majoring in anatomy. Prerequisites, Anat. 201, 202 and 203. Davis, Harne.
- Anat. 205. **Advanced Anatomy.** Number of hours and credits by arrangement. Prerequisite, Anat. 101 or 201. Uhlenhuth, Figge, Smith.
- Anat. 206. **Research in Gross Anatomy.** Number of hours and credits by arrangement. Prerequisite, Anat. 205. Uhlenhuth, Figge, Smith.
- Anat. 207. **Comparative Morphology of the Endocrines.** Number of hours and credits by arrangement. Prerequisites, Anat. 201, 202. Uhlenhuth.

Anat. 208. **Experimental Anatomy of the Endocrines.** Number of hours and credits by arrangement. Prerequisite, Anat. 207. Uhlenhuth.

Anat. 209. **Problems in Physiological Anatomy.** Number of hours and credits by arrangement. Prerequisites, Anat. 201, 202, and either Anat. 207 or 208. Uhlenhuth, Figge.

BACTERIOLOGY

Minors

Bact. 101. **General Bacteriology (5).** Sixteen lectures and 104 laboratory hours. Drs. Hachtel, McAlpine, and Levin.

Bact. 102. **Ommunology (4).** Sixteen lectures and 56 laboratory hours. Drs. Hachtel, McAlpine, and Levin.

Majors

Bact. 201. **Special Problems.** Time and credit by arrangement.

Bact. 202. **Research.** Time and credit by arrangement.

BIOCHEMISTRY

Minors

Biochem. 101. **Principles of Biochemistry (8).** Seven lectures and conferences, and two three-hour laboratory periods a week for sixteen weeks. Prerequisites, inorganic, organic, and quantitative or physical chemistry. Wylie, Schmidt, Brown.

Majors

Biochem. 201. Prerequisite, Biochem. 101. Credit proportioned to extent and quality of work accomplished. Wylie, Schmidt.

Biochem. 202. **Research.** Credit proportioned to extent and quality of work accomplished. Wylie, Schmidt.

PHARMACOLOGY

All students majoring in pharmacology with a view to obtaining the degree of Master of Science or Doctor of Philosophy should secure special training in anatomy, mammalian physiology, organic chemistry, and physical chemistry.

Minors

Pharmacology 101 f.s. **General Pharmacology (8).** Three lectures and one laboratory. This course consists of 90 lectures and 30 laboratory periods of three hours each, offered each year.

Krantz, Carr, Iwamoto, Musser, Harne.

Majors

Pharmacology 202 f.s. **General Pharmacology.** Same as 101 for students majoring in pharmacology. Additional instruction and collateral reading are required.

Krantz, Carr, Iwamoto, Musser, Harne.

- Pharmacology 203. Chemotherapy.** Credit in accordance with the amount of work accomplished. Krantz.
- Pharmacology 204. Carbohydrate Metabolism.** Credit in accordance with the amount of work accomplished. Krantz, Carr.
- Pharmacology 205. Research.** Credit in accordance with the amount of work accomplished. Krantz, Carr.
- Pharmacology 206. Special Problems in Toxicology.** Credit in accordance with the amount of work accomplished. Carr.
- Pharmacology 207. Anesthesia.** Credit in accordance with the work accomplished. Krantz, Carr.

PHYSIOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Physiology 101. Neurophysiology (2).** Two lectures a week, for sixteen weeks, second semester. This course covers the physiology of muscle, peripheral nerve, central nervous system, and sense organs, supplemented by demonstrations. Amberson and Oster.
- Physiology 102. The Principles of Physiology (6).** Three lectures, one conference, and two laboratory periods a week, for sixteen weeks, first semester. This course covers the physiology of circulation, respiration, digestion, the endocrines and the kidney. Amberson and Staff.

FOR GRADUATES

- Physiology 201. Experimental Mammalian Physiology.** Time and credit by arrangement. Amberson, Smith, Oster.
- Physiology 202. Water and Electrolyte Balance in the Vertebrate Body (1).** One lecture a week, for sixteen weeks. Amberson.
- Physiology 203. Physiology of Reproduction (3).** Two hours a week, lectures, conferences and seminars, for twenty-four weeks. January to June, 1948. Smith.
- Physiology 204. Electrophysiology (1).** One lecture a week, for sixteen weeks. Oster.
- Physiology 205. Cellular Respiration (1).** One lecture a week, for sixteen weeks. Anderson.
- Physiology 206. Seminar.** Credit according to work done. Amberson and Staff.
- Physiology 207. Research.** By arrangement with the head of the department. Staff.

SCHOOL OF PHARMACY

BACTERIOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bact. 115. Serology and Immunology (3).** Three lectures and three laboratory periods a week, first semester. Shay.

FOR GRADUATES

- Bact. 200, 201. **Chemotherapy (1, 1)**. One lecture a week, first and second semesters. Offered in alternate years. Shay.
- Bact. 210. **Special Problems in Bacteriology**. Laboratory course. Credit determined by amount and quality of work. Shay.
- Bact. 221. **Research**. Credit determined by amount and quality of work. Shay.

BOTANY AND PHARMACOGNOSY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 101, 102. **Taxonomy of the Higher Plants (2-4)**. One lecture and one laboratory period a week. Given in alternate years. Slama.
- Bot. 111, 113. **Plant Anatomy (2-4)**. Two lectures a week. Slama.
- Bot. 112, 114. **Plant Anatomy (2-4)**. Two laboratory periods a week. Prerequisites, Bot. 111, 113. Slama.

FOR GRADUATES

- Pharmacognosy 201, 202. **Advanced Study of Vegetable Powders (4-8)**. Two lectures and two laboratory periods a week. Prerequisites, Bot. 111, 113, 112, 114. Slama.
- Pharmacognosy 211, 212. **Advanced Pharmacognosy (4-8)**. Two lectures and two laboratory periods a week. Prerequisites, Bot. 111, 113, 112, 114. Slama.
- Pharmacognosy 220. **Research**. Credit according to amount and quality of work performed. Slama.

PHARMACEUTICAL CHEMISTRY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Pharm. Chem. 111, 113. **Chemistry of Medicinal Products (2, 2)**. Three lectures a week, first and second semesters. Prerequisites, Chem. 35, 37, 53. Hartung.
- Pharm. Chem. 112, 114. **Chemistry of Medicinal Products (2, 2)**. Two laboratory periods a week, either or both semesters. Prerequisites, Pharm. Chem. 111, 113, or may be taken simultaneously with Pharm. Chem. 111, 113. Hartung.
- Chem. 142, 144. **Advanced Organic Laboratory (2, 2)**. Two laboratory periods a week, any one or both semesters. Prerequisites, Pharm. Chem. 112, 114, or equivalent. Hager.
- Chem. 146, 148. **Identification of Organic Compounds (2, 2)**. One lecture and two laboratory periods a week, any one or both semesters. Prerequisites, Pharm. Chem. 112, 114, or equivalent. Hager.

- Chem. 151, 153. Physiological Chemistry (4).** Two lectures a week, first and second semesters. Prerequisites, Chem. 15 and Physiology 22. Chapman.
- Chem. 152, 154. Physiological Chemistry (4).** Two laboratory periods a week, first and second semesters. Prerequisites, Chem. 151, 153, or may be taken simultaneously with Chem. 151, 153. Chapman.

FOR GRADUATES

- Pharm. Chem. 201, 203. Survey of Pharmaceutical Chemistry (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Pharm. Chem. 111, 113, or equivalent. Hartung.
- Pharm. Chem. 211, 213. Chemistry of the Alkaloids (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Pharm. Chem. 111, 113, or equivalent. Hartung.
- Pharm. Chem. 220. Advanced Pharmaceutical Syntheses (2-6).** Laboratory and conferences, either or both semesters. Prerequisites, Chem. 142, 144. Hartung.
- Pharm. Chem. 222. Advanced Pharmaceutical Analyses (1-4).** Laboratory and conferences, either or both semesters. Prerequisites, Chem. 146, 148. Hartung.
- Pharm. Chem. 230. Pharmaceutical Chemistry Seminar (1).** Required of students majoring in pharmaceutical chemistry. Hartung.
- Pharm. Chem. 235. Research.** Credit determined by amount and quality of work performed. Hartung, Hager.
- Chem. 258. Organic Qualitative Analysis (2-4).** Two to four laboratory periods a week, either semester. Prerequisites, Chem. 146, 148, or equivalent. Hager.

PHARMACOLOGY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Pharmacology 111. Official Methods of Biological Assay (4).** Two lectures and two laboratory periods a week, first semester. Prerequisites, Pharmacology 51, 52. Chapman.

FOR GRADUATES

- Pharmacology 201, 202. Methods of Biological Assay (8).** Two lectures and two laboratory periods a week, first and second semesters. Prerequisite, Pharmacology 111. Offered in alternate years. Chapman.
- Pharmacology 211, 212. Special Studies in Pharmacodynamics (8).** Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Pharmacology 51 and 52 and the approval of the instructor. Chapman.

Pharmacology 221, 222. Special Studies in Biological Assay Methods (4-8). Credit according to amount of work undertaken after consultation with the instructor. Laboratory work and conferences, first and second semesters. Prerequisites, Pharmacology 111, 201, 202. Offered in alternate years. Chapman.

Pharmacology 250. Research Pharmacology. Properly qualified students may arrange semester hours' credit with the instructor. Chapman.

PHARMACY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Pharmacy 101, 102 (3, 3). Two lectures and one laboratory a week. Prerequisite, consent of the instructor. DuMez, Allen.

Pharmacy 111, 112. Advanced Prescription Compounding (2, 2). Two laboratory periods a week. DuMez, Allen.

FOR GRADUATES

Pharmacy 201, 202. Advanced Pharmaceutical Technology (4, 4). Two lectures and two laboratory periods a week. DuMez.

Pharmacy 211, 212. Survey of Pharmaceutical Literature (1, 1). One lecture a week. DuMez.

Pharmacy 221, 222. History of Pharmacy (2, 2). Two lectures a week. Given in alternate years. DuMez.

Pharmacy 235. Research in Pharmacy. Credit and hours to be arranged. DuMez.

PHYSICS AND PHYSICAL CHEMISTRY

FOR GRADUATES AND ADVANCED UNDERGRADUATES

Chem. 187, 189. Physical Chemistry (3, 3). Three lectures a week, first and second semesters. Prerequisites, Phys. 10, 11; Chem. 15, 35, 37. Estabrook.

Chem. 188, 190. Physical Chemistry (2, 2). Two laboratory periods a week, first and second semesters. Prerequisites, Chem. 187, 189, or may be taken simultaneously with these courses. Estabrook.

Phys. 101. Thermodynamics (3). Three lectures a week, first semester. Given in alternate years. Prerequisites, Phys. 10, 11; Math. 20, 21; Phys. Chem. 189, 190. Estabrook.

Phys. 121, 122. Electricity and Magnetism (3, 3). Two lectures and one laboratory period a week, first and second semesters. Given in alternate years. Prerequisites, Phys. 10, 11; Math. 20, 21. Estabrook.

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