STUDENT ACTIVITIES
Theatre (top left)
Radio (top right)
Religion at the Center (above)
Formal (left)
Orchestra (below)
THE GEORGE FRANKLIN AND SARAH CATHERINE GETTY
College of Liberal Arts

OSCAR G. DARLINGTON, Dean

DIVISIONS AND DEPARTMENTS

DIVISION I: HUMANITIES. (M. S. SCHMITZ, Division Head)
1) Art
2) English, Speech, and Theatre
3) Foreign Languages
4) Music
5) Philosophy and Religion

DIVISION II: NATURAL SCIENCES. (ROBERT BOWDEN, Division Head)
1) Biology
2) Chemistry
3) Mathematics
4) Physics

DIVISION III: SOCIAL SCIENCES. (W. E. BINKLEY, Division Head)
1) Economics and Business Administration
2) History and Political Science
3) Psychology and Sociology

DIVISION IV: TEACHER EDUCATION. (C. C. ROBERSON, Division Head)
1) Elementary and Secondary Education
2) Industrial Arts
3) Physical Education
4) Public School Music
5) Public School Art

Course descriptions will be found in the departmental listings beginning on page 49.

OBJECTIVES

The objectives of the College of Liberal Arts are: to develop in each student a philosophy which gives meaning to life, apart from its material accomplishments; to cultivate comprehensiveness of thought; to
share in the intellectual achievements of mankind; to encourage critical thinking, continued reflection and re-examination of basic ideas and values; to develop skill in finding information and in evaluating such information so as to distinguish fact from opinion; to contribute to knowledge by research and by re-interpretation of the old in the light of the new.

Such a well-rounded, liberal education with stress on moral and spiritual values is designed to develop in the student poise and perspective with which to meet and evaluate life situations; to fit him for responsible citizenship; to give him a scholarly foundation for further study or professional training; and to afford him a rich and full personal life.

ADMISSION STANDARDS

In general, students of good character who show evidence of a capacity to profit by college experience and do the quality of work acceptable for graduation are admitted. To judge this each applicant for admission must be considered on his individual merits. Character, personality traits, attitudes, and desire for learning will be taken into consideration as well as the high school record.

Graduates of first-grade high schools, or the equivalent, and non-graduates with 15 acceptable units of high quality work and recommendation of the high school principal may be admitted. Applicants ranking low in their high school record may be admitted on the basis of the results of achievement and aptitude tests or upon presentation of other evidence of fitness for college work. Those deficient in entrance requirements for the work of their choice may make up the deficiencies to the extent of two units, by taking the work during their Freshman year either in college or from other agencies approved by the University.

COURSE OF STUDY

From the numerous offerings of courses a student may select special groups of studies of curricula which meet his needs, interests and abilities. The student should keep in mind that his later adjustment to changing conditions will depend largely on the insights and skills developed by a broad general education.
THE DEGREE OF BACHELOR OF ARTS

General and Advanced Courses. The curricula leading to the degree of Bachelor of Arts may be divided into two general divisions, general education and advanced education. The first two years are usually devoted to general education, presenting the courses which will furnish the foundation and background for advanced education. The advanced education will consist of the courses which presuppose the completion of the general education as necessary for successfully pursuing these studies. Work in the field of concentration is taken largely on the advanced level, together with advanced electives.

Prescribed: Certain courses are prescribed in the program of general education. These include English Composition, Basic Speech, Basic Principles of Social Science (or two one-year courses in two of the social sciences), Historical Study of Philosophy and Religion (or a one-year course in Philosophy or Religion approved by that department's chairman), two one-year courses in two of the natural sciences, one full year of advanced work in the humanities, and two years of foreign language. The extent to which transfer credits satisfy the requirements in a field shall be determined by the Dean of the College after consultation with the appropriate faculty, subject to approval by the Dean of the University.

The Field of Concentration. At the end of the second year the student is ready to choose, if he has not already done so, one division and the department within this division in which he desires to complete his field of concentration. For example, a prospective chemist would choose Division II — Natural Sciences, Department of Chemistry.

The candidate for a degree must complete in a logical sequence a field of concentration of not less than forty-five quarter hours. The adviser will assist the student in planning the field of concentration. Candidates for the degree of Bachelor of Arts who expect to teach in the public school must meet the requirements as specified in the Division of Teacher Education.

The following departments offer fields of concentration toward the Bachelor of Arts degree in the College of Liberal Arts:
FIELDS OF CONCENTRATION

Biology
Chemistry
Economics and Business Administration
English, Speech, and Theatre
Foreign Language

History and Political Science
Mathematics
Music
Philosophy and Religion
Physics
Sociology and Psychology

Sample Curriculum Plan

This is only a suggestion to illustrate the manner in which the prescribed courses, the field of concentration, and elective courses may be distributed in a four year plan of study leading to the degree of Bachelor of Arts.

FRESHMAN YEAR.

English Composition, C-1, 2, 3.
Basic Speech, S-1, 2, 3.
Principles of Social Science, C-11, 12, 13.
A year of Natural Science.
A Foreign Language.
An elective (which may be chosen according to his objective, if the student has already chosen his objective).

SOPHOMORE YEAR.

Second Year of Natural Science.
One year of a Humanities Course on the Sophomore Level.
Historical Study of Philosophy and Religion, C-31, 32, 33.
*One course in the field of concentration.
One free elective.

THIRD YEAR.

Two courses in the field of concentration.
One course in the Division of his field of concentration, but not in the department.
One course outside the department of his field of concentration.
One free elective.

FOURTH YEAR.

Two courses in the field of concentration.
One course in the Division of the field of concentration, but not in the department.
One course outside the Division of the field of concentration.
A free elective.
*If the student has not chosen a major field by his Sophomore year, he may take a free elective here, then take an additional course in the field of concentration during either the Junior or Senior year in place of the free elective of that year — 45 quarter hours being considered a field of concentration.

To avoid too great a concentration on the major area this stipulation is made:

The student should have at least 120 quarter hours of work outside the department of his major. (This will permit 60 hours in the major field. Additional hours may be permitted in the major field if they are required for teacher certificate purposes.)

**THE DEGREE OF BACHELOR OF SCIENCE IN EDUCATION**

The curricula of candidates for the degree of Bachelor of Science in Education are set up in accordance with the requirements of the State Department of Education for certification. The Chairman of the Department of Education and members of the department carefully advise the students in planning a schedule of courses to meet his goal.

The prescribed courses for the degree of Bachelor of Science in Education are: English Composition, Basic Speech, the Social Studies Core or two one-year courses in two of the social studies, one year of advanced work in the humanities, the Philosophy Core or nine hours of Bible, and a minimum of twelve quarter hours of natural science.

Elementary Education students major in Elementary Education. Secondary Education students complete their professional education courses and their chosen teaching field during their last two years. This should include a teaching major in at least one field or a comprehensive major as defined by the State Department of Education in a broader field of concentration. Broader fields of concentration include: Business Education, Health and Physical Education, Industrial Arts, Music, Science, and Social Studies.

The Division of Teacher Education, in cooperation with the other divisions within the College of Liberal Arts, offers a program of education including the professional and educational course requirements leading to certification in the following fields:

1. **Elementary Education**

   a) *Four-Year Degree Program*. The Bachelor of Science degree in Elementary Education and a Provisional Elementary Certificate may
be obtained by completing 180 quarter hours in courses that are appropriate for an elementary teacher.

b) Two-Year Cadet Program. Cadet certification is permitted with two years of teacher preparation. To be eligible for such a certificate, the student must have completed ninety-three quarter hours of training in the Elementary Teacher Education program. This Certificate may be renewed only upon evidence of the completion of thirty-six quarter hours of additional training applicable to the degree in Elementary Education.

2. Physical Education leading to a Provisional High School Certificate or a Professional Special Certificate.

3. Industrial Art Education leading to a major or minor in the field of Industrial Arts and the Provisional Certificate.

4. Public School Music:
   a. Four year Provisional in Music
   b. Four year Special in Music

5. Secondary Education
   a. Art-Minor
   b. Biological Science
   c. English
   d. General Science, Physics, Chemistry
   e. History
   f. Languages: French, Spanish, German, Latin, Russian
   g. Mathematics
   h. Science (Comprehensive major)
   i. Social Science (Comprehensive major)
   j. Speech

6. Secretarial
   a. Special in Business Education
   b. Bookkeeping-Social Business
   c. Stenography-Typing
   d. Typing

Any additional information about the teacher education program can be obtained from the Department of Education, Ohio Northern University, Ada, Ohio.
ASSOCIATE IN ARTS CERTIFICATE

A Certificate of an Associate in Arts is awarded to students enrolling in the special two-year course established in the College of Liberal Arts. At present, special curricula of two nine-month academic years are offered in certain of the Liberal Arts Departments. A student who is enrolled in one of these two-year curricula will receive college credit which may be transferred to any other university or college and is eligible to transfer to a full four-year degree program at any time he desires. If the student transfers to the degree program, he is expected to complete the Freshman and Sophomore requirements for the Bachelor's degree which are not all included in the two-year program. The Associate in Arts Certificate is at present offered in special secretarial fields, industrial supervision, medical technology, recreational direction, and in commercial art. Further two-year courses with college credit may be developed on sufficient demand. For further information regarding these courses write to the Dean of the College of Liberal Arts.

COMBINATION CURRICULA

ARTS-ENGINEERING

During the first three years the student is registered in the College of Liberal Arts and must secure a minimum of 145 quarter hours of credit. Upon the successful completion of the fourth year in the College of Engineering with a quality point average of two or better, and at least 45 quarter hours, the degree of Bachelor of Arts is granted. Upon fulfilling the requirements as specified in his selected engineering curriculum, the student will also be awarded the appropriate degree in engineering at the end of the fifth year.

Students entering with advanced credits from another college must be in residence three quarters (the third year) and complete a minimum of forty-five quarter hours in the College of Liberal Arts in this University.

Students entering the Arts-Engineering curriculum must conform to the rules and regulations of the College of Liberal Arts and the College of Engineering. By complying with these regulations, it will be possible for the student to secure both the degree of Bachelor of Arts and the appropriate engineering degree in five years. For the special fees pertaining to this combined program, see section on fees.
ARTS-NURSING

For the student who is preparing to enter a school of nursing the following program is suggested: The completion of three years of work at Ohio Northern and graduation from an accredited school of nursing. The University then awards the Bachelor's degree.

Graduate nurses who complete this curriculum will also be awarded the Bachelor's degree. Some modification of the curriculum may be made to fit their interests and objectives.

Arrangements have been made for a combined curriculum in Liberal Arts and Nursing with Memorial Hospital, Lima, Ohio. Students who elect this combination curriculum will be expected to do better than average quality work while in college and to have those personal and social qualities which are so essential to success in the field of nursing. This curriculum should be of special interest to young women of northwestern Ohio.

ARTS-LAW

Law schools require a minimum of three years of college work for admission. It is strongly recommended that the student plan to complete a total of 135 quarter hours, exclusive of Physical Education, and to cover the prescribed and group elective courses as well as a major of "300" or "400" courses in the Social Sciences. A broad liberal education is the best foundation for the study of Law. The fourth year is taken as the Freshman year in Law School. Upon the successful completion of the Freshman year in Law with a cumulative quality point average of 2.0 or better the degree of Bachelor of Arts is granted. After two more years of successful work in the College of Law, the degree of Bachelor of Laws is granted.

It should be noted that a student admitted upon advanced credit from another college must be in residence three quarters (the third year) and complete a minimum of forty-five quarter hours in the College of Liberal Arts in this University.

Students entering upon the Arts-Law curriculum must meet the regular entrance requirements and conform to the rules and regulations of the College of Liberal Arts.

ARTS-MEDICAL TECHNOLOGY

Students completing a two-year non-degree program meeting the requirements of the National Registry of Medical Technologists and administered by the Departments of Biology and Chemistry qualify for entry into an Approved School of Medical Technology.
Students completing a minimum of 135 quarter hours of work in the College of Liberal Arts, including all Division requirements and those requirements prescribed by the Departments of Biology and Chemistry for field of concentration, will be awarded the Bachelor's degree on presentation of evidence of registration as a Medical Technologist by the National Registry. The Departments of Biology and Chemistry allow one-fourth of the total number of credit hours required for a field of concentration (biology or chemistry) for work completed during the one-year internship required for registration.

Copies of the curricula outlined for these two programs may be secured from the Departments of Biology and Chemistry.

PRE-PROFESSIONAL CURRICULA

LEADING TO THE BACHELOR OF ARTS DEGREE

DENTISTRY AND MEDICINE

With a steadily increasing number of qualified applicants applying for admission to colleges of Dentistry and of Medicine, it is strongly recommended that the student looking forward to professional training in these fields plan to complete four years of undergraduate work with a high scholastic average. We offer curricula leading to the Bachelor of Arts degree which afford the appropriate foundation courses for later professional training in these professional fields.

Our counseling follows the recommendation of the many professional schools which advise a well-rounded Liberal Arts education with emphasis on social studies as well as on courses specifically preparatory to the study of medicine.

RELIGIOUS EDUCATION AND PRE-THEOLOGY

The suggested outline of studies which we offer will be found to meet the pre-professional requirements of practically all theological schools. Many seminaries urge that the student have a thorough knowledge of the social sciences and include in their suggestions at least one natural science. This outline includes a broad and liberal course which will enable the student to appreciate his graduate studies to the fullest extent. The courses given plus the emphasis throughout upon Christian idealism will bring about a realization of the most important aim of this department which is to produce for the world well equipped, spiritually-minded young men who will minister to the needs of their communities in every possible way.

45
FOREIGN AND PUBLIC SERVICE

The demand for well-prepared officials in the United States Foreign Service and in the Public Service of the federal and state governments is at the greatest peak in American peace-time history. To properly prepare for work in these fields a student should plan to continue with graduate education after receiving his degree of Bachelor of Arts. Ohio Northern University offers an inter-departmental concentration in International Relations and a departmental concentration in Political Science to prepare students for the Foreign Service and for Public Service. The Dean of the College of Liberal Arts should be consulted for the curricula outline in these fields.

GENERAL REGULATIONS

1. The student may not register for more than eighteen hours of academic work unless he has received a rating of “B” or better in the preceding quarter, in which case the Dean may grant permission for extra hours.

2. The student must notify the Dean of his choice of a field of concentration before registering for the Junior year. The Dean will then name an advisor for the student.

3. No course for which the student has received a “D” is acceptable toward a field of concentration.

4. Seniors taking courses in the “100” series in other than Foreign Languages or Mathematics will not receive full credit. Seniors selecting “100” courses should consult the Dean.

5. Juniors and Seniors are required to schedule eighty percent of their courses from the “300” and “400” group.

6. The amount of transferable extension credits will be determined in individual cases by the Dean of the college, but in no case will it exceed 45 hours.

7. Application for Senior rating and graduation must be made to the Registrar during the third quarter of the Junior year.

HOW COURSES ARE NUMBERED

Courses are numbered in “100”, “200”, “300”, and “400” series. With the exception only of students who have had special prerequisites, Freshmen may take courses only in the “100” series. Students of Sophomore rank are not permitted to take “300” and “400” courses unless it is recommended by the advisor and allowed by the Dean of the college. Students of Junior and Senior rank are required to take at least eighty
percent (80%) of their schedule among courses of "300" and "400" classification unless modification of this requirement is permitted by the Dean in an individual case upon the recommendation of the advisor.

The last digit of the course number designates the quarter in which the course is given: "1" indicates it is given in the Fall; "2" indicates a Winter Quarter course; and "3" indicates a Spring Quarter course. When a course ends in "0" it may be given any quarter.

The middle digit identifies the course in the series in the department. A hyphen between course numbers indicates that the course must be taken in sequence, with all parts completed before full credit is allowed. A comma indicates that quarters can be taken separately out of sequence.

The college reserves the right to withdraw any course and to limit the number of students in any course.

CLASSIFICATION OF STUDENTS

For purposes of classification the minimum requirements for Sophomore standing are thirty-eight quarter hours of academic work; for Junior standing, eighty-four hours; for Senior standing, 130 credit hours.

WARNING AND PROBATION

A quality point average of 1.8 is required throughout the Freshman year as the minimum level of satisfactory work.

A 1.9 accumulative is required for admission to Sophomore rank on good standing and shall be the quality point average required for satisfactory standing throughout the Sophomore year.

A 2.0 accumulative is required for admission to Junior rank on good standing and shall be the quality point average for satisfactory standing throughout the Junior and Senior years.

Should a student's point average for any quarter fall below that designated for satisfactory standing in that quarter, the student shall be placed on warning and shall remain on warning until his accumulative point average shall rise to the level required for satisfactory standing in that quarter.

Should a student on warning receive a quality point average for the quarter less than that stipulated for satisfactory standing in that quarter, he shall be placed on probation and shall remain on probation until his accumulative quality point average shall rise to the level stipulated for satisfactory standing in that quarter.

A student who is on probation with his accumulative point average below that of satisfactory standing and who fails to make a quality
point average in that quarter on probation, shall be considered for possible dismissal from the University.

A student who has been on probation and returns to satisfactory status shall be placed directly on probation in any subsequent quarter in which his quality point average drops below the satisfactory level for that quarter.

GRADUATION

As a condition of graduation with the Bachelor’s degree, a student must complete 180 quarter hours of academic work plus six hours of chapel and six hours of physical education. The student must have a cumulative qualitative point average of at least 2.0.

A residence period of the last three quarters and the completion of at least forty-five quarter hours, with at least ninety quality points, elected largely from “300” and “400” courses in the College of Liberal Arts of this University are minimum requirements for a student admitted on advanced standing.

Students of unusual ability may, upon petition and with the consent of the Academic Council, complete their work in less than twelve quarters. Applicants for this privilege should have an average of 3.6 quality points per hour; high distinction rank. No student, however, shall be allowed to graduate unless he has at least eleven quarters work and has been in residence with Ohio Northern University the last three quarters before graduation.

THE CORE COURSES

C-1, C-2, C-3. ENGLISH COMPOSITION 3 hours

These three quarters, constituting a year’s course for the freshman, are designed to develop in the student the basic skills of writing and speaking the English language. The three quarters are required of all Freshmen.

C-11, C-12, C-13. BASIC PRINCIPLES OF SOCIAL SCIENCE 3 hours

An integrated study of the fields of sociology, economics, political science and anthropology.

C-31, C-32, C-33. HISTORICAL STUDY OF PHILOSOPHY AND RELIGION 3 hours

A study of religion and philosophy as a developing body of convictions by which man has attempted, in every age, to solve the problems and mysteries of life. A one-year unit of study designed and recommended for meeting the Philosophy-Religion requirements for graduation.
College of Liberal Arts

THE DEPARTMENTAL COURSES
The staff member first named in each department serves as chairman.

Art

MRS. YOUNKMAN

The department strives to develop within the student an appreciation of the fine arts. An introduction to the techniques involved with the media used in creative expression is presented as a necessary means to this end.

101-102-103. ART EDUCATION 6 hours
These courses are designed to meet the needs of teachers in the primary grades, various media of expression are used: pencil drawing, color, lettering, posters, projects, perspective, design, diction and appreciation. The work is integrated with other elementary school activities, dramatics, athletics, music and social activities.

111-112-113. FREEHAND DRAWING 9 hours
Work in life, still life and the antique as a means of expression, emphasizing the various possibilities and limitations of the black and white mediums, with problems in composition.

121-122. DESIGN 6 hours
Course is planned to present basic elements of design, using line and two- and three-dimensional design problems, in black and white and color as a means of expression. Six periods per week.
Special problems in design, theory, and presentation. Ceramic, textile, metallic, stone, wood, and combined materials are considered for decorative and structural elements.

201-202-203. HISTORY AND APPRECIATION OF ART 9 hours
(201) Prehistoric Art to Byzantine Art, 500,000 B.C. to 313 A.D.
(202) Early Christian Art to Italian Renaissance, Fourth to Fifteenth Centuries
(203) Flemish Art to Twentieth Century Art, Fourteenth Century to Twentieth Century

231-232-233. PAINTING 9 hours
Still life, models and landscape. Emphasis on composition and color. Both oil and water.
251-252. COMMERCIAL ART
Principles of lettering and its application to commercial design. Illustrative drawing with pen and ink, pencil, wash and other mediums. Composition and introduction to the various phases of commercial art.
Prerequisite: 111-112.

321. NORTHERN PAINTING
Flemish paintings from the Van Eycks to the beginning of the sixteenth century; German painting from the early fifteenth century through Duerer, Gruenewald and Holbein.

440. SPECIAL ART PROBLEM
Open only to the advanced student who is adequately prepared, in the opinion of the instructor, to pursue special work under the instructor’s supervision.

Biology

PROF. STAUFFER, ASSOC. PROF. BOWDEN, ASST. PROF. MOODY,
ASST. PROF. PENNABACKER, ASST. PROF. SNYDER

The aims of this Department are to enable the student to understand better the living world of which he is a part, to prepare for the teaching field, to obtain a biological foundation for the study of medicine, dentistry, nursing, and other professional courses requiring a knowledge of biology, and to qualify for admission to graduate work.

Students concentrating in Biology must complete a minimum of forty-five hours in this Department including Courses 111, 112, 113, 201, 202, 223, (331, 332) or (301, 302), 303, 402, 430, and 440. If graduate work is anticipated, students concentrating in Biology are expected to include at least a year of Chemistry, a year of Physics, Statistics, courses in Psychology and Sociology, and should have a reading knowledge of German and French.

111, 112, 113. GENERAL BIOLOGY
A study of some of the biological principles and concepts manifested in plant and animal life with considerable emphasis on their application to man. Discussion in the presence of laboratory materials, 5 hours.

121-122. ANATOMY AND PHYSIOLOGY FOR NURSES
An introductory course designed to develop in the student an appro-
cation and understanding of the structure and function of the human body.

The laboratory includes dissection of a representative mammal and experiments illustrating physiological principles. *Lecture, discussion, laboratory, 7 hours.*

Nursing education students only.

201, 202. BOTANY 8 hours

These courses deal with some advanced concepts and principles concerning plant life. Special emphasis is given to the general classification, the life cycles, and the environmental relationships of representative members of the plant kingdom.

These courses are of fundamental importance to all students concentrating in biology and students who, from a cultural standpoint, wish to know something of the origin and development of plants. *Discussions in the presence of laboratory materials, 5 hours.*

**Prerequisite:** General Biology 111-113, or permission of the instructor.

213. LOCAL FLORA 3 hours

A systematic study of vascular plants, both native and introduced. A field course supplemented by greenhouse and herbarium studies. To be arranged. Permission of the instructor. *(Formerly 110).*

223. INVERTEBRATE ZOOLOGY 4 hours

A course dealing with a series of invertebrates. *Discussion in the presence of laboratory materials, 5 hours.*

**Prerequisite:** General Biology 111-113, or permission of the instructor.

301, 302, 303. VERTEBRATE ANATOMY AND EMBRYOLOGY 12 hours

Vertebrate anatomy consists of a comparative study which includes discussion and laboratory dissection of the different systems in representative forms. In embryology general principles of vertebrate development are discussed; laboratory study of certain vertebrate embryos illustrates the changes in form in the development of the adult organism.

The course is fundamentally important to biology majors and to students who expect to teach biology, study medicine, or who from a cultural standpoint, wish to know something of the origin and development of the human body. *Lecture, discussion, laboratory, 8 hours.*

**Prerequisite:** General Biology 111-113, or permission of the instructor.
311. PLANT ANATOMY 4 hours
A course dealing with the development and structure of the plant body. Lecture, discussion, laboratory, 6 hours.
Prerequisite: Botany 201, 202, or permission of the instructor.

312. PLANT PHYSIOLOGY 4 hours
A critical study of some of the functional processes of Plants. Lecture, discussion, laboratory, 6 hours.
Prerequisite: Botany 201, 202, or permission of the instructor.

331, 332. PHYSIOLOGY AND ANATOMY 8 hours
All sessions held in the Julius and Fannie Rogoff Laboratory of Physiology.
A course designed to develop in the student an appreciation and understanding of the structure and function of the human body.
The lectures include a few by guests who lecture in fields of their specialization.
The laboratory includes dissection of a representative mammal and experiments illustrating physiological principles. Lecture, discussion, laboratory, 6 hours.
Prerequisite: General Biology 111-113, or permission of the instructor.

342. ANATOMY AND PHYSIOLOGY OF MUSCLE 1 hour
A thorough dissection of the muscles of the cat with a comparison to human musculature. One half the time is spent on representative muscle physiology experiments. Laboratory, 3 hours.
Prerequisite: General Biology 111-113 and permission of the instructor.

402. LABORATORY TECHNIQUE 3 hours
Methods of collecting, killing, preserving, and preparing materials for demonstration and laboratory purposes are considered. A microscopic study of various plant and animal tissues is made. Lecture and class work, 1 hour; laboratory, 6 to 8 hours. Time schedule to be arranged. Permission of instructor. (Formerly 219).

423. ECOLOGY 3 hours
A study of the general principles of bio-ecology. Field studies are emphasized.
Prerequisite: Botany 202, Invertebrate Zoology 223, or permission of the instructor.
430. Heredity
A study of the principles of inheritance in plants and animals with considerable emphasis on human inheritance and the problems of eugenics. Lectures and discussions in the presence of hereditary materials. Prerequisite: General Biology 111-113, or permission of the instructor.

433. Evolution
A study of the development of the organic world, and an examination of the evidences of evolution and the theories attempting to explain the method of evolution. Prerequisite: General Biology 111-113 and permission of the instructor.

440. Biological Problems
Minor investigations for qualified Juniors and Seniors who are concentrating in Biology. By arrangement any quarter.

Chemistry
Prof. Bloom, Asst. Professor Luzenski

The objective of this department is to give thorough instruction in the fundamental principles and techniques of the science of chemistry, to give adequate preparation for those students who wish to do graduate study in chemistry, to give an introduction to and an appreciation of a natural science of liberal arts students in any field. A solid foundation in chemistry is also provided for those students who have need of chemistry in preparation for various related professional fields.

Students majoring in chemistry are allowed to choose their program according to four different options: (1) the A.B. degree with major in chemistry, (2) the A.B. degree with major in chemistry, for teaching in secondary schools, (3) the A.B. degree with major in chemistry for pre-medical and pre-dental students, and (4) a combined five-year program leading to the degrees of B.S. in Education and the A.B. degree with major in chemistry.

The five-year program offers excellent training for students who are preparing to teach in secondary schools or colleges, or to enter graduate school. Students enrolled in the five-year program who also meet the standards required by the chemistry department may be appointed to
serve as Teaching Fellows during their last two years of training. In this position, they will serve as junior staff members, assisting the department faculty in supervising the elementary laboratories. This experience is very valuable background either for teaching or for later graduate work.

The curriculum is identical for the first three years under either of the four options. Differentiation is made only in the senior year, or for the last two years in the five-year program.

**BASIC CURRICULUM**

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<td>Social Science C-11, C-12, C-13, Basic</td>
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<td>Physical Education</td>
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<td><strong>JUNIOR YEAR</strong></td>
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<td>Chemistry 351-352-353 Qualitative Analysis, Quantitative Analysis</td>
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<td>Physics 241-242-243 General Physics</td>
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<td><strong>OPTION 1, A.B. Degree with Major in Chemistry</strong></td>
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54
College of Liberal Arts

SENIOR YEAR
Chemistry 411-412-413 Physical Chemistry 12 QTR. HOURS
Psychology 201-202 General Psychology 6
Physics 302 Modern Physics 3
Electives, Division of Science 12-15
Electives, outside Division of Science 6-9
Electives in Humanities 9

48-51

OPTION 2, A.B. Degree with Major in Chemistry
For Secondary School Teachers

SENIOR YEAR
Chemistry 411-412-413 Physical Chemistry 12 QTR. HOURS
High School Curriculum 3
Human Growth and Development 3
School and Social Order 3
High School Methods 3
Student Teaching 9
Education Electives 6
Electives in Humanities 12

51

OPTION 3, A.B. Degree with Major in Chemistry
For Pre-medical and Pre-dental Students

SENIOR YEAR
Chemistry 411-412-413 Physical Chemistry 12 QTR. HOURS
Biology 301-302-303 Vertebrate Anatomy & Embryology 12
Psychology 201-202 General Psychology 6
Electives, Division of Science 9
Electives, Division of Humanities 12

51

OPTION 4, Five-year Program
Degrees of B.S. in Education and A.B. with major in Chemistry

Fourth Year
Same as Option 2. Teaching Fellows will reduce the number of electives by 3 hours each quarter in order to devote more time to their teaching duties. The degree of B.S. in Education is conferred at the end of the fourth year.

Fifth Year
Same as Option 1, except that 10 hours of advanced physics is substituted for physical chemistry. Teaching Fellows will take not more than 13 hours per quarter. The A.B. degree with major in chemistry is awarded at the end of the fifth year.
Any of the above curricula, either the four-year or five-year programs, may be shortened by taking part of the work in the summer sessions. Minor adjustments in the curricula may be made by permission of the chairman of the chemistry department to serve the special needs of individual students.

Any course with a hyphenated number is planned as an integrated sequence. The first and second quarters are prerequisite for the second and third quarters respectively.

101-102. Chemistry for Nurses 8 hours
This course consists of a brief introduction to the major concepts of chemistry, the second quarter being devoted largely to a simplified treatment of organic chemistry with applications to biochemistry, designed to fulfill the needs of students of nursing. Three hours lecture and one three-hour laboratory period per week.

111-112-113. General Chemistry 12 hours
This course constitutes a careful study of the fundamental laws of chemistry and of the common elements and their compounds; the mathematical approach is utilized with emphasis on the development of the scientific method of reasoning. The laboratory experiments are designed to illustrate the major concepts discussed. Designed primarily for students majoring in chemistry or other natural science, pre-engineering and pre-medical students. May be elected to fulfill a part of the requirements of the Division of Natural Sciences of the College of Liberal Arts. Pre-pharmacy students take Chemistry 111-112-123 as a one-year sequence. Three hours lecture and one three-hour laboratory per week.

Prerequisites: 1 unit of high school algebra. Students who fail the entrance test in mathematics and are required to take the remedial algebra, Mathematics 100, are advised to postpone their registration for Chemistry 111 until Mathematics 100 has been completed. College Algebra, Mathematics 123, should be taken concurrently.

123. Elementary Qualitative Analysis 5 hours
An introductory study in the semi-micro qualitative analysis of acids, bases, and salts, with emphasis on the salts of the common metallic elements. The theory is based on the principles of ionization, mass action and chemical equilibria. The lecture work is a continuation of Chemistry 111-112; the laboratory work consists of an introduction to elementary qualitative analysis. Designed primarily for pre-pharmacy students. This course is not accepted as prerequisite for quantitative
analysis. Three hours lecture and two three-hour laboratory periods per week.

Prerequisite: Chemistry 111-112.

201-202-203. Chemical Calculations 3 hours
A course in the application of the mathematical principles of chemistry for all students taking chemistry beyond the freshman year. One hour lecture per week.

Prerequisite: Chemistry 113 or 123.

211-212-213. Organic Chemistry 12 hours
A beginning course in organic chemistry dealing with the chemistry of the aliphatic, aromatic, and heterocyclic compounds of carbon. Some attention will be given to condensed nuclear hydrocarbons and their derivatives, and to the chemistry of carbohydrates and proteins. Three hours lecture and one three-hour laboratory per week.

Prerequisite: Chemistry 113 or 123. Chemistry 201-202-203 is recommended to be taken concurrently.

301-302-303. Elementary Physical Chemistry 6 hours
A study of the theoretical principles of chemistry with frequent problem assignments illustrating the various physical concepts discussed. These include atomic and molecular structure and properties, the gas laws, chemical equilibria, pH and buffer systems and hydrolysis, thermo-chemistry, and introductory material in connection with chemical kinetics and colloid chemistry. Lecture 2 hours per week.

Prerequisite: Chemistry 113 or 123.

Prerequisite or concurrent: Chemistry 201-202-203.

Offered on demand.

321. Advanced Qualitative Analysis 2 hours
A study of the laboratory techniques and theoretical principles governing the qualitative analysis of many of the less familiar elements. Laboratory work is done on the semi-micro scale and the applications of spot tests and special reagents are introduced. Discussion, 1 hour; laboratory, 3 hours per week.

Prerequisite: Chemistry 351.

Offered on demand.

351. Qualitative Analysis 5 hours
A thorough study of the principles of chemical equilibrium as applied to analytical procedures. The laboratory work consists of detection of the common cations and anions by semi-micro technique. Re-
quired of chemistry majors. Lecture three hours per week; two three-hour laboratory periods per week.

Prerequisite: Chemistry 111-112-113, or a minimum of 12 quarter hours of chemistry on the freshman level.

Prerequisite or concurrent: Chemistry 201.

352-353. Quantitative Analysis 10 hours
A continuation of Chemistry 351, with more advanced study of chemical principles as applied to quantitative separations and measurements. The laboratory work consists of standard gravimetric and volumetric methods, with a few instrumental techniques introduced in the last quarter. Chemistry 351-352-353 is planned as a continuous integrated sequence in analytical chemistry. Students with credit for a year of combined general chemistry and qualitative analysis on the freshman level are not permitted to enter Chemistry 352, but first must take Chemistry 351. Three hours lecture and two three-hour laboratory periods per week.

Prerequisite: Chemistry 351.

Prerequisite or concurrent: Chemistry 202-203.

341-342-343. Elementary Biochemistry 6 hours
A chemical approach to the field of physiological chemistry with emphasis on the physical chemistry involved in biochemistry; the electronic theory of organic chemistry; optical activity; the chemistry of proteins, carbohydrates, lipids, steroids, isoprenoids; and a survey of the aromatic compounds of medicinal significance. Lecture 2 hours per week.

Prerequisite: Chemistry 213.

411-412-413. Physical Chemistry 12 hours
This course is primarily concerned with the solution of problems arising in the field of chemical physics, with emphasis on chemical thermodynamics, electrochemistry, chemical kinetics and the phase rule. The laboratory work is designed to illustrate the major concepts studied. Lecture 3 hours; laboratory, 3 hours per week.

Prerequisites: Chemistry 213, 353, Mathematics 203, Physics 223 or 243.

421. Advanced Quantitative Analysis 3 hours
A laboratory course in which more advanced methods of analysis are performed than those encountered in Courses 211, 212 and 213. Com-
plex analyses are emphasized and organic elemental analysis is introduced. *One hour lecture, 6 hours laboratory per week.*

**Prerequisites:** Chemistry 353, 213.
Offered on demand.

422. **Chemical Literature**

2 hours

A library problem course designed to familiarize the student with the history of chemistry and to provide experience in the use of a scientific library. *Discussion, 2 hours per week.*

**Prerequisites:** Chemistry 213, 353.
Offered on demand.

423. **Advanced Inorganic Chemistry**

2 or 3 hours

A course devoted to the discussion of the chemical and physical properties of compounds of elements other than carbon with emphasis on those elements forming complex compounds. The laboratory work is primarily concerned with the preparation of many of the types of compounds discussed. *Lecture 2 hours; laboratory, 3 hours per week.*

**Prerequisite:** Chemistry 353.
May be taken without the laboratory as a two hour course.
Offered on demand.

431. **Organic Preparations**

2 hours

Preparation of a number of organic compounds which are not adaptable to the beginning course. Some procedures will be taken from the chemical literature. Consideration will be given to the interests of individual students. *Six hours laboratory per week, with occasional conferences with the instructor.*

**Prerequisites:** Chemistry 213, 353.
Offered on demand.

432. **Organic Qualitative Analysis**

3 hours

An introductory course in qualitative analysis of organic compounds, based primarily on solubility, class reactions, and the preparation of derivatives. *One hour recitation and 6 hours laboratory per week.*

**Prerequisite:** Chemistry 213.
Offered on demand.

440. **Chemistry Problems**

1–3 hours

Independent study of special topics in chemistry. Either a library study or a minor laboratory investigation. Open to qualified seniors with the consent of the department chairman.
Offered on demand.
Economics and Business Administration

ASSISTANT PROFESSOR COOLEY, ASSOCIATE PROFESSOR RITZ

The aim of the Department is to develop a basic understanding of the market economy and to provide an opportunity to learn the fundamental techniques of business administration.

Students concentrating in the Department of Economics and Business Administration are required to take 45 quarter hours within the Department. This must include Economics 201, 202, and 203, which is a prerequisite for several other advanced courses. Other required courses are: Economics 120, 131, 132, 133, 323, 352, and 353. Students concentrating in the department will be individually advised on their area of intra-department concentration.

120. STATISTICS 5 hours
See Mathematics.
Prerequisite: Sophomore standing or consent of adviser.

131-132-133. PRINCIPLES OF ACCOUNTING 9 hours
Fundamental process of accounting applied to service, trading and manufacturing concerns; preparation of working papers and financial statements from properly arranged accounts in general ledger; practice sets for representative business concerns completed. (Required of all Economics majors)

201-202-203. PRINCIPLES OF ECONOMICS 9 hours
A survey course with an analytic description of our economic system. An introduction is made to the price system, supply and demand factors, money and banking, the relation of government to the economy, the role of producers and consumers, and the analysis of income and employment. (Required of all Economics majors)

213. BUSINESS ORGANIZATION 3 hours
A study of the various types of business and industrial organizations, both simple and complex. Throughout the course, emphasis is placed on recent trends in management, and methods required for administrative, managerial and industrial control. (Formerly 312).

222. OFFICE MACHINES AND PRACTICE 8 hours
The purpose of this course is to learn to operate a variety of devices designed to handle the arithmetical work of the office. It includes instruction on listing and non-listing adding machines, registering, cal-
calculating and bookkeeping machines. A study will be made of the applications of the accounting machines, the punch card systems and the electronic computers.

301. Intermediate Accounting 5 hours
General financial accounting theories with problem illustrations and applications. Classification of accounts, balance sheet forms, items and analysis of balance sheet, depreciation, goodwill, bonds and sinking funds, amortization, surpluses and reserves, statement of affairs, partnerships, and insurance.
Prerequisite: Economics 133.

312. Cost Accounting 5 hours
Accounting for manufacturing enterprises with emphasis on job order process and standard costs accounting. (Formerly 382).
Prerequisite: Economics 301.

323. Business Law 3 hours
The legal aspect of common business transactions involved in the making of contracts, the formation and legal results of agencies, and various employment relationships, the law governing the marketing of goods as it relates to personal property, and negotiable instruments. (Required of all Economics majors) (Formerly 313, 321).

341. Labor Economics 3 hours
A study of labor as a factor in maximizing production, its use in relation to other factors, and its remuneration. The importance of a freely competitive labor market and of labor mobility are explained. Theories of the determination of wages, and bargaining theory are explored. The history and methods of labor unions, and government relations to labor, are given careful attention.

342. Social Legislation 3 hours
The evolution of our protective and labor relations legislation and the economic implications arising therefrom. Students will be required to familiarize themselves with the broad provisions of Federal and state laws on poor relief, unemployment compensation, minimum wages, fair employment practices, and labor relations.

351. Marketing 3 hours
The function of marketing in the economic system will be studied in its institutional aspects, its efficiencies, and its current trends of development. Government regulation of markets will be considered. The
students will evaluate actual business problems on the basis of the principles covered in this course.

352-353. MONEY AND BANKING  6 hours
A study of the organization and operation of American banking institutions. Includes theories of money and credit; commercial banking practices; reserve banking; monetary and banking laws; money market; money and credit in the world economy.
Prerequisite: Economics 203. (Required of all Economics majors)

362. CORPORATION FINANCE  3 hours
The issuance of corporation securities and their regulation will be related to the problems of fixed and working capital, income level, dividend policy and the use of borrowing. Case analysis will be used to consider the problems of expansion, recapitalization, and failure.

363. PERSONNEL MANAGEMENT  3 hours
A course analyzing the functions of the personnel department in industry, its development, and techniques. Text will be supplemented by case analysis of problems in selection, training, and incentives. The course is designed to broaden the student's appreciation of the human factor in industry.

371. SALESMASTERSHIP  3 hours
A study of the background, modern requirements and techniques of salesmanship, with controlled experience in actual selling in cooperation with neighboring businesses and industries.

381. FEDERAL INCOME TAX  5 hours
Federal taxation and income tax reporting.

383. INTERMEDIATE ECONOMY THEORY  3 hours
Advanced theory considering special problems of pricing, production, and distribution under perfect competition, oligopoly, duopoly and monopoly. An attempt is made to relate theory to practices in the American economy.

391. BUSINESS COMMUNICATIONS  3 hours
A study of the techniques of writing business letters and reports, including technical reports. The objective is efficient and accurate communication of economic and business facts and the writer's conclusions therefrom.
400. Economic Workshop

A special workshop on current economic problems, to be offered upon sufficient demand. Program of study subject to approval of the department chairman and credit to be granted according to university standards.

No prerequisite. Consent of instructor is required.

403. Auditing

Principles and accepted procedures of auditing accounting records and statements, with special emphasis given to making of working papers and the writing of audit papers for making a complete audit.

411. Comparative Economic Systems

Critically evaluates capitalism, socialism, fascism, and communism as they touch on the economics of pricing, production and distribution. Welfare implications of each will be weighed against pure theoretical concepts.

413. Budgeting

Procedure for estimating income and expenses; the organization for controlling those expenditures and for measuring the operating efficiency of the organization.

Prerequisite: Accounting 301. (Formerly 401).

421. International Economics

This course studies both theories and actual current problems of trade between nations. Governmental restrictions and controls, such as tariffs, quotas and exchange controls, and the importance of multilateral trade are examined. Scarce resources, population, and employment trends are studied in relation to their bearing on world economics.

423. Public Finance

A study of how the Federal government and local units of government finance themselves. Taxation in its many forms, the securities issued by government units, and the problem of management of the national debt of the United States are fully considered.

432. Government Regulation of Business

It traces the history and development of government regulation of economic affairs in the United States. The provisions of the U. S. Constitution bearing on this subject, leading court opinions, and the more important regulatory laws of recent years are reviewed.
442-443. **History of Economic Thought** 6 hours

A critical analysis of the development of economic thought from Greek and Hebrew writers to modern economists. Particular emphasis given to the works of Adam Smith, Malthus, Ricardo, Marx, Marshall, Keynes and our modern American economists. Attention is given to the influence of environment and political thought. Text and original sources.

**Prerequisite:** Economics 203 or permission of the instructor. (*Formerly* 301-392).

452. **Advanced Accounting** 5 hours


**Prerequisite:** 311. (*Formerly* 302).

461. **Investments** 3 hours

A practical study of the investment of savings. The course analyzes the many different investments available, such as common and preferred stocks, bonds of all types, building and loan shares, life insurance, real estate, etc. It evaluates each in terms of (1) safety of principal, and (2) return. Actual balance sheets of firms are analyzed from the standpoint of investment desirability. How to gain information about investments, the processes of investing, and the operations of the securities markets are thoroughly discussed.

**SECRETARIAL**

101-102-103. **Typewriting** 9 hours

A series of courses designed to give the student a practical working knowledge of the typewriter combined with a study of the business letter, office forms, compositions, rough drafts, and tabulation. A high degree of accuracy and speed is required.

111-112-113. **Shorthand** 3 hours

Basic courses in Gregg Simplified Shorthand, designed to give the student a thorough foundation in principles, and practice in reading and writing at a satisfactory rate.

211-212. **Shorthand and Transcription** 3 hours

Advanced courses with emphasis on speed and accuracy in production. High degree of efficiency is required.

**Prerequisite:** Shorthand 113. (*Formerly* 115, 116, 117).
222. Office Machines and Practice 3 hours
   Study and use of such office machines as dictaphone, mimeograph,
   and calculator. Theory and practice in office work both in class and
   laboratory. See Economics 222.

391. Business Communications 3 hours
   A study of the techniques of writing business letters and reports, in-
   cluding technical reports. The objective is efficient and accurate com-
   munication of economic and business facts and the writer's conclu-
   sions therefrom.

223. Secretarial Practice 3 hours
   A study of the secretarial profession with special emphasis on office
   mail, communication, travel, business reports, office organization, and
   the financial and legal duties of the secretary combined with the ap-
   plication of theory in a University office. Three class meetings and the
   clock hours of work experience each week.
   Prerequisites: Shorthand 211, Typewriting 103, and Office Practice
   222 or equivalents.

Education

Professor Roberson
Professor Hanson
Professor Jones
Professor Zaugg
Assistant Professor Morrone

See page 39 for description of curricula and degrees.

INTER-DEPARTMENTAL COURSES

121-122-123. Introduction to Education 1 hour each
   To help prospective teachers make intelligent decisions relating to
   their own qualifications in the various fields of teaching. The teaching
   profession; personal and social qualifications essential to good teach-
   ing; relative supply and demand in various fields. (Required of all
   Freshmen in the Division of Education)

213. Educational Psychology 3 hours
   See Department of Psychology.
   Prerequisite: Psychology 202 or permission of the Instructor.
223. CHILD DEVELOPMENT 3 hours
Characteristics of the child at different levels of maturity; physical, mental and emotional growth; growth and organization of meanings; control of social and ethical behavior; development of personality. 
Prerequisite: Psychology 201 or permission of the Instructor. (Formerly 136).

310. READING IMPROVEMENT 3 hours
Promotes understanding of the Reading Process and provides experiences that aid in comprehension and speed through a study of basic reading skills; the mechanics of reading, causes of difficulties; prevention and treatment of individual problems, and evaluation of progress in reading.

360. EVALUATION AND MEASUREMENT OF PUPIL PROGRESS 3 hours
A study of the basic problems of evaluation and measurement as they apply to instruction; construction of tests for use in the classroom and a survey of standardized tests and their uses.

370. THE SCHOOL AND HUMAN RELATIONS 3 hours
This course provides the prospective teacher or the experienced teacher an opportunity to make a careful analysis of how good human relations develop within the home, school and community. 
Prerequisite: Junior or senior standing, Child Growth and Development, or by permission of instructor.

400. PHILOSOPHY OF EDUCATION 3 hours
A critical study of the conflicting theories of education. Specifically, this course is designed to help the student evaluate and choose in all matters of school life and management.

401. PRINCIPLES OF TEACHING 5 hours
Fundamental principles of teaching and learning. Attention is given to current trends in education; developing units of work; utilizing latent creative abilities; meeting individual needs; managing the daily program, evaluating pupil growth and development.

402. SCHOOL ADMINISTRATION AND ORGANIZATION 5 hours
Designed to give an introductory overview of the administration and organization of education in the United States; federal, state and local administration; financing public education; the teaching staff; pupil personnel; administration and organization of the elementary, junior, and senior high schools; Ohio school laws; buildings and equipment. (Formerly 252).
**403. History of Education**  
3 hours  
A study of the historical background of modern school theory and practice. Courses 401, 402, and 403 make a logical sequence which should be completed during the Junior year. These three Courses follow the series in Educational Psychology completed during the Sophomore year.

**420. Workshop on Curriculum Improvement**  
1–3 hours  
Designed primarily for students who wish to work on individual and group problems growing out of their own school situations. Open only to those with teaching experience. The class meets several times a day every day, and no other course can be taken concurrently. Credit: 1½ quarter hours per week of instruction.

**430. Audio-Visual Aids in Education**  
A study of audio and visual materials and their uses in the promotion of the learning process. Open for credit to advanced students in education who have not had audio-visual education as a part of the material offered in their courses in Methods. Permission of instructor.

**440. Problems in Teacher Education**  
1–3 hours  
This course provides for individual study, investigation, or project in the field of professional teacher education. Limited to advance students concentrating in the field of teacher education.

**Elementary Education**

101-102-103. Art Education  
See Department of Art.  
2 hours

111. Music Literature and Appreciation  
See Department of Music.  
3 hours

112. Introduction to Music  
See Department of Music.  
3 hours

113. Music Education  
See Department of Music.  
3 hours

210. Elementary Handwork and Hobbies  
See Industrial Arts. (Formerly 233).  
3 hours

233. Children's Literature  
A study from the literary and educational point of view of the best  
3 hours
of literature for the elementary school children; the place of literature in the education of the child; principles involved in the teaching of Literature with stress on its integration with other school activities. (Formerly 138).

241. Teaching of Reading 5 hours
Principles and techniques of teaching Reading in the elementary grades. Attention will be given to reading readiness, phonics, oral and silent reading, diagnostic and remedial measures, evaluation of textbooks and tests. (Formerly 241-242).

251. Functional Arithmetic 3–5 hours
A comprehensive study of the basic concepts in Arithmetic. A survey of the fundamental processes with special emphasis upon problem solving. Not required of students who pass a comprehensive examination in Arithmetic.

252. Teaching Arithmetic 5 hours
Methods and principles underlying the teaching of Arithmetic in the elementary grades; diagnosis and remedial work; preparation and evaluation of materials of instruction.

283. Science for the Elementary Teacher 3 hours
Content, methods and principles underlying the teaching of Science in the elementary grades. Special emphasis will be given to the organization and use of materials in the teaching of Elementary Science.

301. The Elementary School Curriculum 3 hours
Designed for student teachers (in order) to help them develop learning situations in the classroom that are in harmony with basic psychological principles of learning.

312. Teaching of the Language Arts 3 hours
Problems and methods of teaching oral and written expression, handwriting and spelling and their relation to other subjects in the curriculum. Attention is given to the organization and administration of a functional language arts program; diagnostic and remedial measures preparation and evaluation of materials of instruction. (Formerly 239).

313. Teaching of the Social Studies in the Elementary Schools 3 hours
Objectives, methods, modern tendencies and evaluation in History, Geography, Civics, and related fields, planning of experience units and materials of instruction.
320. Arts — Crafts 3 hours
   See Industrial Arts. (Formerly 235).

330. Kindergarten Methods and Materials
   A study of programs and practices in the kindergarten of four and
   five-year-olds. Open to advanced students in education and to cadets
   by special permission. Given upon sufficient demand.

340. Primary Methods and Materials
   Study of programs and practices in the primary grades required of
   all students who are candidates for the Kindergarten-Primary Certifi-
   cate.

380. Student Teaching in the Elementary Schools 9-12 hours
   Ten hours student teaching is required of all candidates for the State
   Elementary Four-Year Provisional Certificate. The work consists of
   planning and teaching under supervision in the elementary grades.
   The following prerequisites are required. 1. Have a minimum scholar-
   ship rating of 2 quality points per scheduled hour. 2. Approved by
   Director of Teacher Education. (Formerly 268).

410. Remedial Reading 3 hours
   Causes of reading difficulties; the diagnosis and remedial treatment
   of each type of disability; a study of diagnostic tests. (Formerly 242).

SECONDARY EDUCATION

   Senior standing. (Formerly 250).

Teaching of Business Education 3 hours
   To acquaint students with the functions of business education in
   the secondary school, and to help them acquire the techniques and
   methods necessary for the teaching of typewriting, shorthand, tran-
   scription, bookkeeping and social business in the high school.

Teaching of English 3 hours
   Effective devices and methods employed in teaching English in the
   high school; methods of teaching Literature, Grammar, oral English,
   and Composition; evaluation and selection of textbooks, visual ma-
   terials and library references; extra-curricular programs; objective
   tests. Winter
Teaching of History and Social Sciences 3 hours
Purposes and aims in the teaching of History and the Social Sciences; evaluation of integrated courses in the Social Sciences; selecting and organizing materials; methods of procedure; objective tests. Winter

Teaching of Mathematics 3 hours
Reorganization of Mathematics in secondary schools; evaluation of Arithmetic, Algebra, Geometry and unified Mathematics; selecting and organizing materials; objective tests. Fall

Teaching of Languages 3 hours
Work is adapted to meet the needs of students majoring in the different languages. Aims and methods of teaching languages; study of direct and indirect methods, recent trends; evaluation of textbooks; suggestions for projects; organizing language clubs; objective tests. Spring

Teaching of the Natural Sciences 3 hours
Designed for students who are preparing to teach one or more of the natural sciences. The work is adapted to meet the needs of the individual student. Selection and organization of subject matter; planning of laboratories; choice of equipment and textbooks; improvised equipment; selected projects in the different sciences; objective tests. Spring

Teaching of Speech 3 hours
Effective methods of teaching Speech in the elementary and secondary schools. Special attention is given to the place of speech in extracurricular programs, debate, dramatics and radio. Fall

390. The High School Curriculum 3 hours
A study of secondary school curriculum practices, curriculum development, curriculum changes, and trends.

450. Driver Education
A course designed for those who plan to teach driving in the public schools. The course will consist of a number of classes and driving demonstrations daily. No other course can be taken concurrently. The credit will be approximately 1½ hours per week of instruction.

480. Student Teaching—Junior and Senior High Schools 6–12 hours
Student teaching is required of all candidates for the State Second-
ary Four-Year Provisional Certificate. The following prerequisites are required:

1. Have a Senior rank. 2. Have a minimum scholarship rating of 2 quality points per scheduled hour. 3. Have completed courses in Educational Psychology, Principles, and Special Methods. 4. Teach either major or minor subjects. 5. Approved by the Director of Teacher Education.

The work consists of planning and teaching under supervision either in the junior or senior high school, at least one hour a day or the equivalent of six hours a week for one quarter. Six hours credit is given for approximately seventy-two hours of teaching and two one-hour conference periods per week throughout the quarter. Student teaching is offered during the Fall, Winter and Spring Quarters. By arrangement.

English, Speech, and Theatre

ASSOCIATE PROFESSOR PRICE
ASSOCIATE PROFESSOR BARBER
ASSOCIATE PROFESSOR RANNEY
ASSISTANT PROFESSOR BENNETT
MISS CRAWFORD, MR. HIGGINS, MR. PEGIS, MR. SMITH

OBJECTIVES

The courses in Language, Literature, Speech, and Theatre are designed (1) to develop the student's skill in writing and in oral communication so that he may express his ideas clearly and effectively and thus better participate as an active member in a democratic community; (2) to give the student a knowledge of literature so that he may read with critical ability, understanding, and appreciation; (3) to give the student a fundamental knowledge and understanding of the nature of language; (4) to provide the opportunity for the student to experience a variety of speech and theatre activities which may make a direct contribution to satisfactory living; (5) to offer advanced work to those who plan to teach in the public schools and to those who plan to continue specialization in graduate study.

CLASSIFICATION OF COURSES

Classification of courses within the department is shown by the middle digit of the course number: 0-3, Literature; 4-5, Language; 6-7, Speech; 8-9, Theatre. For example, 322 is a Literature course, 253 is a Language course, 371 is a Speech course, 483 is a Theatre course, and so forth.
FIELDS OF CONCENTRATION

The Department of English, Speech, and Theatre offers three fields of concentration, as follows:

*General Requirements:* Of the required number of hours for the concentration at least eighteen must be from the Language and Literature classification and at least twenty-seven must be on the 300-400 level. All three concentrations require two years of a modern foreign language (two years in high school being considered the equivalent of one year in college). The English Composition sequence (C-1, 2, 3) and the Basic Speech sequence (S-1, 2, 3) do not count toward a concentration. No course with a grade below C may be counted toward a concentration.

*English:* For a field of concentration in English, the following courses are required: English 201 (Introduction to English Literature); Speech 262 (Oral Interpretation); English 311, 312, 313 (Shakespeare); English 322 (Chaucer); and English 351, 352 (Language Study). Additional courses in the Language and Literature classifications must be selected to complete a minimum of forty-eight hours. In addition to the forty-eight hours within the department, two years of either French or German and one year of English History are required.

*Speech:* For a field of concentration in Speech, the following courses are required: Speech 271 (Elements of Speech); English 331, 332, 333 (The Drama); English 351, 352 (Language Study); and Speech 371, 372, 373 (Public Address). Additional courses must be selected from the departmental offerings to complete at least eighteen hours in the Language and Literature classifications and at least twenty-seven hours in the Speech and Theatre classifications. In addition to the forty-five hours within the department, two years of a modern foreign language are required.

*Theatre:* For a concentration in Theatre, the following courses are required: Speech 261 (Voice and Diction); English 331, 332, 333 (The Drama); and Theatre 381, 382, 383 (Theatre Techniques). Additional courses must be selected from the departmental offerings to complete at least eighteen hours in the Language and Literature classifications and at least twenty-seven hours in the Speech and Theatre classifications. In addition to the forty-five hours within the department, two years of a modern foreign language are required.
ENGLISH COURSES

99. English Review
This course offers a review of English fundamentals for those who need special instruction.

C-1-C-2-C-3. Composition
These three quarters, constituting a year's work for the freshman, are designed to develop the student's skill in writing. All three quarters are required for graduation, except as follows: On recommendation of his instructor and approval of the Director of Freshman English or Department Chairman, a student with a grade of A in English C-1 may substitute three hours of creative writing for English C-2.

Students beyond their first year of college must fulfill assignments in addition to the regular work in order to receive credit for this freshman course.

Prerequisites: English C-1 is prerequisite for English C-2; English C-1 and C-2 are prerequisite for English C-3 (except as noted above). It is not permissible to take two terms' work concurrently.

201, 202, 203. Introduction to English Literature
In these three quarters some of the principal works of the major English writers are studied. This course may be used to fulfill the sophomore requirement in the Humanities. English 201 is required for a concentration in English.

211, 212, 213. American Literature
In these three quarters some of the principal works of the major American writers are studied. This course may be used to fulfill the sophomore requirement in the Humanities.

231, 232, 233. Appreciation of Literature
This course is designed to develop skill in understanding and evaluating all types of imaginative literature. It may be used to fulfill the sophomore requirement in the Humanities.

241-242-243. Journalism
This is a practical course providing basic knowledge of newspaper organization, procedures, and techniques. Students work closely with or are members of the staff of the Northern Review.

253. Vocabulary Study
This course consists of a systematic study of English vocabulary with
a view both to enlarging and enriching the student's store of words and to developing his precise and effective use of them.

301, 302, 303. The Novel 9 hours

In this study of the development of the novel from the eighteenth century to the present, some of the more significant works of the major novelists are read and analyzed.

311-312-313. Shakespeare 9 hours

The early comedies and histories are studied in the first quarter, and some attention is also given to the poet's life and the medium in which he worked. In the second quarter the sonnets, the later histories, the early tragedies, and the foremost comedies are treated. In the final quarter the realistic comedies, the later tragedies, and the dramatic romances are studied. All three quarters are required for a concentration in English.

Prerequisites: English 311 or consent of the Instructor for 312; English 312 or consent of the Instructor for 313.

320. The Short Story 3 hours

A number of the works of the master short story writers are read and studied. Particular emphasis is placed on acquiring an understanding and appreciation of the short story as a literary form, its techniques, and its advantages and limitations as a means of artistic expression.

322. Chaucer 3 hours

The Canterbury Tales and some of the shorter poems are read. The lingual, social, and historical backgrounds of the poems are also treated. English 322 is required for a concentration in English.

323. Milton 3 hours

Paradise Lost is studied in detail. Paradise Regained, Samson Agonistes, and the minor poems are treated as fully as time will allow. (Offered on sufficient demand)

331-332-333. The Drama 9 hours

In the first quarter the student is introduced to the aims and special techniques and characteristics of the drama as an art form. Illustrative plays are studied, beginning with simpler and progressing to more mature types, with ultimate emphasis in the third quarter on plays in the relatively more complex tragic mode. Most of the plays studied are
from the modern theatre. All three quarters are required for a concentration in Speech or in Theatre.

**Prerequisites:** English 331 or consent of the Instructor for 332; English 332 or consent of the Instructor for 333.

340. **Creative Writing**
3 hours

In this course students are encouraged to discover and develop their abilities in imaginative and personal writing — verse, fiction, plays, essays — by means of individually directed study of and self-expression in these forms. Writing is supplemented by class discussion and private conferences with the Instructor.

Enrollment is limited and admission is only with approval of the Instructor. A maximum of nine hours of credit is permitted.

350. **College Grammar**
3 hours

This is an intensive study of descriptive English which includes diagramming. It is recommended, in conjunction with English 351 and 352, for prospective teachers of English. (Offered on sufficient demand)

351-352. **Language Study**
6 hours

This is an introductory study from a scientific viewpoint of the pronunciation, grammar, and vocabulary of the English language. Particular emphasis is on modern English and the American dialects. English 351 and 352 are required for a concentration in English or in Speech.

**Prerequisites:** English 351 or consent of the Instructor for 352.

401, 402, 403. **World Literature**
9 hours

In the first quarter the masterpieces of Greek and Roman writers are studied. In the second quarter some of the principal works of the major Italian, Spanish, German, and French writers from the Middle Ages to the middle of the eighteenth century are treated. Some of the principal works of the major German, French, Norwegian, and Russian writers from the middle of the eighteenth century to the present day are studied in the final quarter. All works are read in English translation. (Offered on sufficient demand)

440. **Seminar: Language and Literature**
1–3 hours

Qualified seniors concentrating in English may undertake an individual research project supervised by a member of the department. A maximum of three hours of credit is permitted.

**Prerequisites:** English C-3 at this University or approval by the Department Chairman upon special recommendation by the member of the department who will supervise the project.
SPEECH COURSES

S-1-S-2-S-3. Basic Speech 3 hours
The three quarters, constituting a basic course in practical public speaking, stress public presence skills and are required for all freshmen in the College of Liberal Arts.

160. Speech Science: Speech Improvement 3 hours
Materials are developed for the individual to aid students with personal articulation, voice, rhythm, hearing, or symbol problems.
Prerequisites: Admission by consent of the Instructor.

260. Speech Science: Speech Re-Education 3 hours
The first course of a possible two-unit sequence devoted to the study of speech disorders; the materials of this unit are developed from the point of view of the elementary and secondary school teacher.

261. Individual Speech: Voice and Diction 3 hours

262. Individual Speech: Oral Interpretation 3 hours

263. Individual Speech: Acting Fundamentals 3 hours
The development of expressive and modulated individual speech is stressed; the literature of and for personal expression is studied. Speech 261 is required for a concentration in Theatre. Speech 262 is required for a concentration in English.
Prerequisites: Speech 261 or consent of the Instructor for 262; Speech 262 or consent of the Instructor for 263.

271. Oral Language: Elements 3 hours

272. Oral Language: Public Speaking I 3 hours

273. Oral Language: Public Speaking II 3 hours
The nature and philosophy of oral communication in the various areas of speech are explored; the principles and practices of public speaking in contemporary life are developed and executed. Speech 271 is required for a concentration in Speech. This course may be used to fulfill the requirement of a second year in the Humanities for Liberal Arts sophomores.
Prerequisites: Speech 272 or the equivalent for 273.

360. Speech Science: Advanced Speech Re-Education 3 hours
The work of Speech 260 is continued with further exploration of the
nature and rehabilitation of speech disorders; and opportunity is presented for each student to assist with a clinical problem.

**Prerequisites:** Speech 260 or the equivalent for Speech 360.

371. **Public Address: Debate** 3 hours

372. **Public Address: Advanced Public Speaking** 3 hours

373. **Public Address: Discussion** 3 hours

The function and place of public debate, public speaking, and public discussion in a democratic society are examined; opportunities for intercollegiate participation in the various areas are presented. Speech 371, 372, and 373 are required for a concentration in Speech.

470. **Seminar: Speech** 1-3 hours

Qualified seniors concentrating in Speech may undertake an individual research project supervised by a member of the department. A maximum of three hours of credit is permitted.

**Prerequisites:** English C-3 at this University or approval by the Department Chairman upon special recommendation by the member of the department who will supervise the project.

**THEATRE COURSES**

281-282-283. **Theatre Workshop** 3 hours

The work of the sequence is directly related to the production schedule of the Northern Players and Theta Alpha Phi.

291-292-293. **Radio Workshop** 3 hours

The work of the sequence is directly related to the current University radio and television programs.

381-382-383. **Theatre Techniques** 9 hours

The fundamentals of practical and esthetic technical play production are presented in the first and second units; the third unit presents the basic considerations for good direction. Theatre 381, 382, and 383 are required for a concentration in Theatre.

**Prerequisites:** Theatre 381 or consent of the Instructor for 382; Theatre 382 or consent of the Instructor for 383.

480. **Seminar: Theatre** 1-3 hours

Qualified seniors concentrating in Theatre may undertake an individual research project supervised by a member of the department. A maximum of three hours of credit is permitted.

**Prerequisites:** English C-3 at this University or approval by the De-
partment Chairman upon special recommendation by the member of
the department who will supervise the project.

481-482-483. **Play Production** 9 hours

Unit one of this sequence considers the elements of expressive design
in settings, lights, costumes, and movement; unit two provides ad-
vanced work in the theories and techniques of directing; unit three
develops the many-faceted duties and responsibilities of the producer-
director.

**Prerequisites:** Theatre 381, 382, and 383 or the equivalent for 481;
Theatre 481 for 482; Theatre 482 for 483. Theatre 381, 382, 383 (Thea-
tre Techniques) and Theatre 481, 482, 483 (Play Production) are ordi-
narily offered in alternate years.

**Foreign Languages**

**Professor Schmitz, Associate Professor Myers, Miss Hoffman**

The ultimate educational value of knowing foreign languages and
literatures is that it helps the student to cultivate a greater breadth
and comprehensiveness of thought, to arrive at a more thorough un-
derstanding of a foreign culture, and to lead to a deeper knowledge of
the English language and the American cultural heritage.

The various courses in French, German, Spanish, and Italian are
designed to meet both cultural and practical needs, promoting profi-
ciency in understanding, speaking and writing the foreign language.
Lectures, discussions and written work in the majority of the courses
are carried on in the foreign language, so that linguistic proficiency
may be acquired along with the study of literature.

The Schoonover Language Laboratory provides opportunity for
practice with recording machinery. If a student expects to do graduate
work or to specialize in Science, he should have a working knowledge
of German or French, or both.

Elementary and intermediate courses in French, German, Spanish
and Italian may be counted as Upper Division Courses if taken during
the Junior or Senior year. Students desiring to take a field of concen-
tration in foreign languages should arrange details with Professor
Schmitz.
LANGUAGE LABORATORY 1 hour

Two hours of scheduled activities in the Schoonover Laboratory are required with each Foreign Language course.

FRENCH

101-102-103. ELEMENTARY FRENCH 3 hours

Ear training leading to instantaneous aural comprehension. Oral structural drill in basic grammatical patterns. Elementary reading based on French life, customs and manners. Simple conversation based on practical, every-day situations.

201-202-203. INTERMEDIATE FRENCH 3 hours


301-302-303. ADVANCED FRENCH CONVERSATION AND COMPOSITION 3 hours

Discussion of selected topics to develop diction, and free composition to acquire command of an idiomatic everyday vocabulary. Recorded conversational dialogues on a variety of topics useful to the student or traveler in France, and transcribed drills in pronunciation are made available for individual practice. Current French periodicals are read and discussed. Laboratory exercises and phonetic apparatus are employed.

Prerequisite: French 201-203.

311-312-313. SURVEY OF FRENCH LITERATURE 3 hours

A study of the main literary currents and characteristic monuments of French literature. Lectures, class discussions, reading of representative masterpieces, reports.

Prerequisite: French 201-203, 301-303.

321-322-323. NINETEENTH CENTURY LITERATURE 3 hours

A study of the main literary currents in the nineteenth century, both in prose and poetry, such as Romanticism, Realism, Naturalism, the Parnassus, Symbolism, etc., through typical and selected texts, accompanied by illustrated lectures on French life, history, art, and civilization, intended as a background for assigned readings.

Prerequisite: French 201-202-203, 311-312.
331-332-333. History of French Civilization 3 hours
Conducted in English. Open to all upper-classmen.
General survey of the development of French civilization from the Roman conquest to modern times. The political, artistic, literary, and scientific activities of the French people in the formation of their national life and their contribution to human progress. Class conducted in English.

GERMAN

101-102-103. Elementary German 3 hours
Pronunciation and spelling. Oral approach, leading to a thorough study of the essentials of German grammar with written exercises. Basic vocabulary. Elementary reading, based on German life, customs and manners. Simple conversation suited to the needs and abilities of the class.

201-202-203. Intermediate German 3 hours
Review of grammar, vocabulary and idioms. More advanced reading (short stories, novels, easy scientific material) with conversation. Occasional lectures about German history, music, architecture, painting, etc., illustrated through films or lantern slides.

221-222-223. Scientific German 3 hours
The objective is to enable the student to use German in professional or graduate work. The technique of reading advanced German and its application; abundant practice in intensive and extensive reading of scientific material. Emphasis on special needs and interests of each individual student according to his field of study.

Prerequisite: German 101-103.

301-302-303. German Conversation and Composition 3 hours
Discussion of selected topics to develop diction, and free composition to acquire command of an idiomatic everyday vocabulary. Recorded conversational dialogues on a variety of topics useful to the student or traveler in Germany, and transcribed drills in pronunciation are made available for individual practice. Current German periodicals are read and discussed. Laboratory exercises and phonetic apparatus are employed.

Prerequisite: German 101-103, 201-203.
311-312-313. Lessing, Goethe, Schiller 3 hours
Although the course emphasizes literary appreciation rather than practice in the language, considerable opportunity is offered in the discussions for such practice.
Prerequisite: German 201-203, 301-303.

321-322-323. Modern German Literature Since 1890 3 hours
Reading and discussion of plays, fiction and poetry of such authors as Hauptmann, Schnitzler, Kaiser, Thomas Mann, Werfel, Hesse, Dehmel, Rilke and George.
Prerequisite: German 201-203, 301-303.

331, 332, 333. Survey of German Literature 3 hours
Basic monuments of German literature from the earliest times to the present. Lectures, class discussions, reading of representative masterpieces, reports.
Prerequisite: German 101-103, 201-203, 301-303.

341-342-343. History of German Civilization 3 hours
Conducted in English. Open to all students, except freshmen.
A survey of the main contributions to Western civilization as represented by characteristic periods and movements. The English lectures, illustrated by slides, motion pictures, music recordings, etc., though diverse in nature, have sufficient unity to constitute a connected picture of German civilization in many of its aspects, and display a correlation between German history, philosophy, literature, music, art, science, etc.

SPANISH

101-102-103. Elementary Spanish 3 hours
Ear training leading to instantaneous aural comprehension. Oral structural drill in basic grammatical patterns. Elementary reading, based on Spanish and Latin American life, customs and manners. Simple conversation based on practical every-day situations.

201-202-203. Intermediate Spanish 3 hours
Review and further elements of grammar. More advanced reading (short stories, plays and novels), with abundant conversational practice, review, vocabulary and idioms. Occasional lectures about Spanish and Latin-American life, history, architecture, art and civilization, illustrated through films and lantern slides.
301-302-303. Spanish Conversation and Composition 3 hours
Conversations based on selected topics to develop oral fluency, and free composition to acquire a command of an idiomatic, every-day vocabulary. A study of commercial Spanish, and practice in correspondence. Recording of conversational dialogues on a variety of topics useful to the student or traveler in Spain, Mexico and Latin America. Current Spanish periodicals are read and discussed.
Prerequisite: 201-203.

311, 312, 313. Survey of Spanish Literature 3 hours
A study of the background, main trends and chief authors in the literature of Spain, from the beginnings to the present, with special emphasis on the Golden Age, lectures, class discussions, outside reading and reports.

321, 322, 323. Spanish-American Literature 3 hours
Main currents of Spanish-American literature with relation to their European background.

331-332-333. Theatre of the Golden Age 3 hours
A study of the origin, formation and development of the Spanish comedia. Representative works of Lope de Vega, Calderon, Tirso de Molina, and Alarcon will be analyzed with special emphasis on individual characteristics.
Prerequisites: 201-203, 301-303.

341-342-343. Hispanic Civilization 3 hours
Conducted in English. Open to all students, except freshmen.
An integrated picture of the political, economic, social, geographical, and cultural forces which have shaped Spain and Latin America.

ITALIAN

101-102-103. Elementary Italian 3 hours
Introductory Italian grammar, including vocabulary and readings in Italian, based on Italian life and customs. Ear-training, diction, and oral practice, especially designed for voice-students; simple conversation suited to the needs and abilities of the class.

201, 202, 203. Intermediate Italian 3 hours
Grammar review; intensive and extensive reading; vocabulary and oral practice. Designed to prepare the student for more advanced study of spoken and literary Italian.
RUSSIAN

101-102-103. Elementary Russian 3 hours
Ear training leading to instantaneous aural comprehension. Oral structural drill in basic grammatical patterns. Elementary reading based on Russian life, customs and manners. Simple conversation based on practical, every-day situations.

201-202-203. Intermediate Russian 3 hours

221-222-223. Scientific Russian
The objective is to enable the student to use Russian in professional or graduate work. The technique of reading advanced Russian and its application; abundant practice in intensive and extensive reading of scientific material. Emphasis on special needs and interests of each individual student according to his field of study.
Prerequisite: Russian 101-103.

LATIN

101-102-103. Elementary Latin 3 hours
These courses are designed for those who have not had Latin in high school. Given upon sufficient demand.

201-202-203. Intermediate Latin 3 hours
Reading from various Latin writers. Given upon sufficient demand.
Prerequisite: Elementary Latin 101, 102, 103 or two units of high school Latin.

GEOGRAPHY

Instructors from the Social Studies Division.

421, 422, 423. Global Geography 3 hours
The study of world geography to the end of discovering the relationship of the physical environment to the economic, social and political problems of mankind.
Emphasis in 421 is upon Latin America; in 422, United States and Canada; in 423, U.S.S.R.

400. Human Geography 3 hours
A study of the adaptation of man to his environment.
History and Political Science

Professor Binkley, Professor Darlington, Professor Hilliard, Associate Professor Gray, Associate Professor Milnar, Mr. Sobers

The History Courses stress the evolution of human institutions with a view to developing an understanding of our present civilization. Students majoring in History must take courses in both American and European History and electives in the allied social sciences, particularly Political Science, Sociology, Psychology and Economics. It is the policy of the Department to recommend no graduate for the teaching of History who has not taken nine hours in American Government in addition to the hours of his History major.

HISTORY

The most appropriate sequence of courses for a field of concentration in History would be History of Western Civilization 111, 112, 113; History of the United States 211, 212, 213; History of England 321, 322, 323; Recent American History 361, 362; or Constitutional History of the United States 331, 332, 333; and Recent European History 371, 372, 373. In addition to the forty-five hours required for the field of concentration in History the student must complete nine hours in American Government.

111. History of Western Civilization to 1517 3 hours

112. History of Western Civilization: 1517 to 1815 3 hours

113. History of Western Civilization:
    1815 to the Present Time 3 hours

An introductory survey of European history. The Mediaeval background, the Renaissance, the rise of international rivalry, the World Wars and their aftermath. Open to Freshmen.

211. History of the United States to 1829 3 hours

212. History of the United States: 1829 to 1876 3 hours

213. History of the United States: 1876 to the Present 3 hours

A study of the political, social and economic development of the United States from the colonial period to the present time. Not open to Freshmen. (Formerly 113, 114, 115).
303. History of Ohio 3 hours
The political and cultural evolution of the state from prehistoric times to the present. (Formerly 212).
Prerequisite: History 211, 212, 213, or consent of the Instructor.

321. English History to 1603 3 hours

322. English History: 1603-1815 3 hours

323. English History: 1815 to the Present Time 3 hours
A general introductory study of the English people in their political, social and institutional development, followed by a survey of the growth of the British Empire and evolution of the British Commonwealth of Nations. (Formerly 104, 105, 106).

331-332-333. Constitutional History of the United States 2 hours
A survey of the constitutional development of the United States from the colonial period to the present time. (Formerly 224, 225, 226).
Prerequisite: Political Science 201, 202, 203, and History 211, 212, 213.

341-342. American Foreign Relations 3 hours
The inception, development and present interpretation of the outstanding foreign policies of the United States; the emergence of the United States as a world power; the trend from isolationism. (Formerly 245, 246).
Prerequisite: History 211, 212, 213.

343. Modern History of the Far East 3 hours
A study of China and Japan since 1840 with attention given to other neighboring nations as they affect the overall political and cultural development of the Far East.
Prerequisite: History 111, 112, 113.

351-352. Ancient History 3 hours
The development of civilization from pre-history to the fall of Rome. Emphasis is placed upon the early pre-Greek Oriental civilization and the cultural and political contributions of the period.

353. Latin America 3 hours
The conditions in Spain and Portugal leading to Latin American colonization, and the growth of the cultural and political institutions of Latin America. The struggle for independence, and the rise of the modern Latin American Republics.
361-362. Recent American History
An investigation and intensive study of some of the major movements of United States history since 1900. (Formerly 216, 217, 218).
Prerequisite: History 211, 212, 213.

371-372-373. Recent European History
Europe and its relations with the rest of the world since 1914: imperialism; the alliance system; World War I; the war debt and reparations problems; the rise of the Soviet Union and the fascist powers; the great depression; relations with the Middle-East and the Far-East; World War II; the Cold War.
Prerequisite: 111, 112, 113.

411, 412, 413. Russian History
A study of the development of Russia from the time of Peter the Great to the present. The courses place emphasis upon the economic and social development, political and religious traditions, the nationalist, liberal, socialist and revolutionary developments, the post-war developments of the U.S.S.R., and the role of Russia in European affairs.

421. Government of the Soviet Union
Demographic, historical and ideological basis of Soviet rule. The social and governmental structure. Nationalism and federalism. The Party. Trade unions and cooperatives. The Church, army, courts, prosecutors, and organs of police. Dynamics of power in the U.S.S.R.

422. Foreign Policy of the Soviet Union
The constant factors in Russian foreign policy. Policy of the early years as affected by Marxian ideology, internal conditions and foreign interference. Period of truce and limited cooperation with Eastern Powers. Second World War and aftermath.

423. Soviet Social and Economic Institutions
A comparative study of the Soviet economic structure and legislation: general principles of private law, including family law; industrial and trade relations; labor law; and collective farms.

440. History Problems
Individual investigation on a specific problem. Open to qualified Seniors majoring in History. (Formerly 254).
POLITICAL SCIENCE

The courses in Political Science are designed to prepare the student for the intelligent performance of the functions of citizenship, for entrance into public service, for the study of Law, and for graduate study in this field. Those majoring in Political Science are advised also to pursue courses in Sociology, Psychology, History and Economics.

201-202-203. AMERICAN GOVERNMENT 9 hours
A study of the origin, development, structure, and functions of national, state and local governments in the United States. Sophomore course. (Formerly 101, 102, 103).

312. MUNICIPAL GOVERNMENT 3 hours
A study of the principal problems of municipal government in the United States. (Formerly 204).

Prerequisite: Political Science 201, 202, 203.

331-332. COMPARATIVE GOVERNMENT 6 hours
A study of the governments of England, France, Germany, and Russia. (Formerly 208, 209).

Prerequisite: Political Science 201, 202, 203, or consent of the Instructor.

341. AMERICAN POLITICAL PARTIES 3 hours
A brief survey of the development of political parties in the United States followed by an investigation of the psychological, sociological, and practical aspects of the phenomena of political parties. (Formerly 210).

Prerequisite: Nine hours of Political Science or the consent of the Instructor.

353. AMERICAN POLITICAL THEORIES 3 hours
The development of American political theories from the colonial period to the present with a view to providing a basis for rational approach to the solution of our present political problems. (Formerly 212).

Prerequisite: Nine hours of Political Science or the consent of the Instructor.

363. PUBLIC ADMINISTRATION 3 hours
A study of the problems and fundamental principles of administration in modern governments, national, state and local. (Formerly 214).

Prerequisite: Political Science 201, 202, and 203 or the consent of the Instructor.
Industrial Arts

ASSOCIATE PROFESSOR LOWMAN, ASSISTANT PROFESSOR KAIN,
MR. CHANEY

The Department of Industrial Arts offers courses for all students in the University and especially for those interested in becoming teachers of industrial subjects in the public schools, those students interested in preparing for industrial vocations and engineering. The courses offer training in the basic skills and current practices in working with woods, metals, plastics, leather and many other materials.

101-102-103. ORIENTATION 9 hours
An introduction to the field of industrial arts. Covers basically the fundamental procedures, operations, and equipment for each area of the field. Presents the nature of industrial arts giving insights into the profession. School visitations, oral and written reports.

111-112. DRAWING 6 hours
Courses offered in College of Engineering.

113. DRAWING 4 hours
General drawing for students majoring in either industrial arts or elementary education. The course includes instrument drawing and sketching in the areas of woodworking, machinery, aeronautics, architecture, advertising, statistics, and cartography; emphasizing orthographic, isometric, perspective, parallel and radial developments, and other types of projections. The course also provides experiences in photocopy work and blueprinting.

200. WOOD TURNING 2 hours

201. WOODWORK I 3 hours
Use, name and care of fundamental hand tools. Use and characteristics of the common woods. The making of joints and their application in simple projects. (Formerly 114).
Prerequisite: Drawing 111.
202. Woodwork II  
3 hours  
Use and care of fundamental power machines. Basic operations and procedures in cabinet making. (Formerly 116).  
Prerequisite: Woodwork 201.

203. Woodwork III  
3 hours  
Advanced cabinet making with carving, inlaying or other types of surface decoration. (Formerly 117).  
Prerequisite: Woodwork 202.

210. Elementary Handwork  
3 hours  
Study of tools, materials and processes suitable for handwork in primary and intermediate grades of public schools. The construction of exemplary projects.

212. Finishing Methods and Materials  
3 hours  
A study of finishing materials, their composition, qualities, and characteristics; protective agents and preservatives. Mixing and matching colors. Interior floor and wall treatment and finishes. Experience in the application of various finishes to wood and metal.

221, 222, 223. Ceramics  
9 hours  
Introduction to pottery making. Experiences in forming, glazing and firing. Hand building and use of the potter's wheel. Introduction to the art phases of the ceramic field with emphasis on the decorative processes. Mold making and casting of ceramic ware.

300. Woodwork IV  
3 hours  
Advanced cabinet making with emphasis on power machine work using jigs and fixtures. Arranged by permission. Any quarter. (Formerly 118).  
Prerequisite: Woodwork 203.

301. Metalwork I  
5 hours  
Fundamentals of sheetmetal work. The course provides practice in layout and pattern drafting, bending, forming, seaming, soldering, resistance and oxyacetylene welding. Minor problems in wrought iron work featuring the construction of fixtures, ornaments, and furniture.

302. Metalwork II  
5 hours  
Machine shop practice and metalwork technology. Precision measuring and layout in metalwork. The study and operation of the engine
lathe, shaper, milling machine, grinder, and power hack-saw. Machining of bar stock and castings.

Prerequisite: 301.

311. Industrial Materials and Processes  4 hours
A study of industrial materials, their characteristics, sources, uses, and the processes of industrial fabrication. Field trips, motion pictures, readings and reports.

320. Crafts and Hobbies  3 hours
Work in copper, brass, wood, plastic, leather, and other materials, in the construction of suitable projects. Readings and reports. (Formerly 235).

321-322. Lapidary and Jewelry  6 hours
Introduction to the fundamentals of the art of lapidary; knowledge of jewelry materials and design. Experiences in working with natural and synthetic stones including the sawing, shaping, polishing, and mounting of jewelry stones.

323. Industrial Arts Organization and Methods  5 hours
Methods of teaching Industrial Arts, objectives, lesson plans, organization, instructional material, readings and reports. Visits to high school shops. Open to Industrial Arts majors and minors of Junior or Senior standing. (Formerly 251).

331. Graphic Arts I  3 hours
Study of fundamental tools, materials, and processes for Silk Screen Printing, Duplicating, Letterpress Printing, Photography, Blueprinting, Block Printing, and others. Visitations, readings and reports.

332. Graphic Arts II  3 hours
Continuation of Graphic Arts I.

343. Shop Planning and Equipment  2 hours
The making of floor plans, selection, arrangement and maintenance of equipment for the small general shop. (Formerly 252).

Prerequisite: Same as and to accompany 323.

353. Patternmaking and Foundry  3 hours
Wood foundry pattern design and construction. The study of molding materials and equipment. Operations and procedures in the con-

361, 362, 363. Advanced Ceramics 9 hours
Emphasis on the art and decorative phases of Ceramics.
Prerequisites: Industrial Arts 221, 222, 223.

400. Woodturning II 3 hours
Continuation of Woodturning 200 on an advanced level. Fall, Winter, Spring.

403. Metalwork III 5 hours

411. Elementary Electricity 3 hours
Study of the fundamental principles of electricity. The application of these principles in laboratory experiments and the construction of projects. Reading and reports.

412. Photography 2 hours
Study of cameras, photographic materials, development and theory of development, printing processes and many other topics. One lecture and one two-hour laboratory period each week. Time to be arranged.

413. Automotives 3 hours
The course is designed to provide an understanding of the construction and operating principles of the modern motor vehicle. The laboratory activities provide experiences in the present-day methods of maintaining and repairing automobiles as determined through scientific methods of diagnosing troubles.
Prerequisites: Metals 302 or the permission of the instructor.

480. Student Teaching in Industrial Arts Education 6 hours
See Education 480.

Mathematics

Professor Langman, Assistant Professor Schlea,
Assistant Professor Stauffer

The aim of this Department is to offer courses primarily as part of a liberal education, as requirements for Engineering students and for
prospective graduate students in Mathematics and Physics. In all courses the theory developed is followed by application to exercises and practical problems when possible.

Students concentrating in Mathematics are advised to follow the sequence of courses. Courses in Calculus may be counted as Upper Division Courses. Those planning to concentrate or do graduate work in this field are expected to complete Courses 320, 321, 322, and 403 or their equivalent. A reading knowledge of German or French is advised.

100. INTERMEDIATE ALGEBRA 2 hours

For students entering with two units in Mathematics (one year of Plane Geometry and one year of Algebra). This course is the equivalent of high school intermediate algebra; classes meet five times per week. No credit is allowed for engineering students.

110. ARITHMETIC 1 hour

A course for the study of the history, theories, methods and devices of arithmetic.

111-112-113. MATHEMATICAL ANALYSIS 9 hours

A one year terminal course covering the fundamentals of algebra, trigonometry, analytic geometry, and the calculus of elementary algebraic functions.

Prerequisite: 1½ units of Algebra.

120. STATISTICS 5 hours

Principles and methods of gathering and interpreting data. This survey includes sampling, tabulation, graphs, averages, probability and error, dispersion, trends, cycles, correlation, variance, and index numbers. (Required of all majors in the Department of Economics).

121. COLLEGE ALGEBRA 5 hours

Systems of equations involving quadratics, ratio, proportion, variation, progressions, mathematical induction, binomial theorem, inequalities, complex numbers, theory of equations, logarithms. (Formerly 101).

Prerequisite: One and one-half units of high school Algebra, and one unit of Plane Geometry.

122. TRIGONOMETRY 5 hours

The fundamental principles of the subject are developed and applied to trigonometric reductions and to the solutions of triangles. Nu-
numerous exercises in the field of geometry, physics, and mechanics are studied. (Formerly 102).

Prerequisite: Plane Geometry and one and one-half units of high school Algebra.

133. Analytical Geometry and Calculus I 5 hours
Elements of plane analytic geometry and calculus with applications. Special topics from integral calculus with applied problems to geometry and physics.

211. Analytical Geometry and Calculus II 5 hours
Continuation of integration with definite integrals and applied problems. Corric sections, curve tracing and applications of the fundamental theorem.
Prerequisite: Math 133.

212. Calculus III 5 hours
Differentiation of logarithmic, exponential and trigonometric functions with applications. Standard forms of integration, curvature, parametric equations, as well as polar coordinates with applications, will be considered.
Prerequisite: Math 211.

213. Calculus IV 4 hours
The most important topics covered here are series, solid analytical geometry, partial differentiation, double integrals, vectors and differential equations.
Prerequisite: Math 212.

223. Practical Astronomy 3 hours
See Department of Physics.

300. Analytical Geometry of Space 4 hours
This offering is planned to give the student a good working knowledge of coordinate geometry in three dimensional space. Equations of the first and second degree of two and three unknowns are stressed. A Seminar Course. (Formerly 206).
Prerequisite: Mathematics 123.

302. College Geometry 4 hours
This Course is designed to meet the needs of those who expect to teach Mathematics in the public schools. General methods leading to the solution and construction of geometric problems are studied. Open to Juniors and Seniors. (Formerly 213).
310. Mathematics of Finance 3 hours
This course acquaints the student with the mathematical tools of business. It treats simple and compound interest; discounts; installment buying; depreciation; price of bonds; amortization; sinking funds and types of annuities. Required of Business Administration and Secretarial students.
Prerequisite: Mathematics 121.

320. Theory of Equations 4 hours
Prerequisites: Mathematics 123, 201.

321. Differential Equations 4 hours
This is a study of the more common types of ordinary differential equations, especially those of the first and second orders, with emphasis on geometrical interpretations and applications to geometry, elementary mechanics and physics. Introduction to the Laplace Transform. (Formerly 212).
Prerequisite: Mathematics 203.

322. Advanced Calculus 4 hours
Introduction to advanced topics including power series and expansion of functions. The Gamma and Beta functions; line and surface integrals; Bessel functions; calculus of variation; complex variables. (Formerly 216).
Prerequisite: Mathematics 203.

330. Basic Statistical Control 3 hours
An advanced course in statistics, presenting fundamental statistical aspects such as variability and frequency distribution and measures of functions of distribution; control charts; tests for significance; fundamentals of the theory of probability and sampling plans.
Prerequisite: Calculus 201, 202, 203.

401. History of Mathematics 3 hours
A study of the development of mathematics with emphasis on number systems as well as basic topics in mathematics. Planned also to give prospective teachers of mathematics a survey of the historical development of the subject.
403. Vector Analysis
Vector algebra and calculus, differential operators, applications to mechanics, electrical theory, and the potential function. (Formerly 215).
Prerequisite: Mathematics 322.

410. Introduction to Modern Algebra
Integers, rational, real and complex numbers, elementary group theory, rings, fields, determinants and matrices.
Prerequisite: Mathematics 320.

Music
Professor Roider, Mr. Jackson, Mr. Salatino

Instruction is provided for those who desire to become teachers and supervisors of Music, and an opportunity is afforded to those who wish to devote themselves to the literature of music, and those who desire a background in choosing music as a profession. Because training in music should be based upon a broad and thorough general education, the curricula have been so constructed as to secure a symmetrical balance between musical and academic subjects.

Bachelor of Arts with Major in Music
A field of concentration of forty-five (45) hours of Music is required for the degree of Bachelor of Arts. The field of concentration consists of the following courses of Theoretical and Applied Music. Music: Theory, History of Music, Applied Music and Ensemble participation. Theoretical Music should constitute about thirty hours of this field of concentration.
The courses are not inflexible and may be changed to meet the requirements of the individual by consulting the Dean and the Head of the Department.

Public School Music
This curriculum is approved by the State Department of Education for the training of teachers and supervisors of Public School Music. The degree of Bachelor of Science in Education is granted to students completing the Public School Music curriculum, and such persons are granted the state four-year Provisional Certificate.
APPLIED MUSIC

VOICE

1–2 hours per quarter

The courses in voice aim to establish correct physical and mental poise, the principles of breathing and breath control, proper diction and articulation using the best of various methods from the old Italian classic of the bel canto period to the modern scientific theories. Repertoire, interpretation, and presentation are stressed, and opportunities are afforded each student to present vocal works before an audience through recital and student assembly. Students are encouraged to study songs in the modern languages, Italian, French, and German.

PIANO

1–2 hours per quarter

The special needs of each individual student guide the approach to instruction in piano playing. Technical studies and selections are carefully chosen to develop the student's ability to recreate the desire of the composer. As music is a means of intellectual culture and artistic enjoyment, the works of the masters are stressed through all grades. Recitals and public appearances give the student an opportunity to gain poise and develop self-assurance.

ORGAN

1–2 hours per quarter

No student will be accepted unless he has reached a grade in piano playing sufficient to warrant organ instruction. The course of study provides for thorough training in preparation for church and concert work including the best organ literature and the principles of modulation, accompaniment, and improvisation.

VIOLIN, VIOLA, AND VIOLONCELLO

1–2 hours per quarter

After a thorough preparation in the fundamentals, instruction in the stringed instruments includes not only the systematic development of adequate technical facility but also definite emphasis on such phases as intonation, tone production, and style, all necessary to artistic performance and interpretation. The course of study is flexible and depends upon the individual needs and qualifications of the student. Offered upon sufficient demand.

WOODWIND AND BRASS INSTRUMENTS

1–2 hours per quarter

Special effort is made to develop the playing ability of the student through the stressing of good tone, phrasing, technique, and ensemble. Suitable material for the advancement of the student is used for the building of technique and repertoire, selected according to the needs
of the individual. Participation in band, orchestra, and ensemble is encouraged. Offered upon sufficient demand.

**Chorus-Choir**  
1 hour per quarter up to 6 hours  
Students of any College of Ohio Northern University interested in singing in the Chorus-Choir have the opportunity to try out for this organization. Music of all types, accompanied and *a cappella*, is used throughout the year. Sacred and secular music for concerts at the University and outside the community are a part of the program.

**Band**  
1 hour per quarter up to 6 hours  
All University students who play band instruments are given the opportunity to play in the University Band. A wide variety of material is used throughout the year. The Band appears in concert as well as at many school and community functions. Band members may participate in woodwind and brass ensembles.

**Orchestra**  
1 hour per quarter up to 6 hours  
An orchestra made up of students of any College of the University is used to augment choral productions and present concerts. Participation at school and local functions is encouraged. Participation in ensembles is expected of orchestral students. Community residents, not enrolled in the University are invited to play in the University Orchestra. Offered upon sufficient demand.

**MUSIC FEES**

The fees for private lessons of students concentrating in the Department of Music are covered by the tuition and the incidental fees paid at the time of registration. Students who are not concentrating in the Department of Music but who register for lessons in voice, organ, or piano are required to pay the following fees:

- One lesson each week $25.00  
- Two lessons each week $45.00

**COURSES IN MUSIC**

101-102-103. Theory  
9 hours  
Including the singing, reading, and writing of scales, intervals, triads and simple part-writing from melodies and figured bases. As the course progresses, seventh chords, modulations, suspensions, and passing tones are added. Original work includes the hymn tune and simple two and three part song-forms.
111. MUSIC LITERATURE AND APPRECIATION 2 hours
A general course for deeper understanding and a more intelligent
discrimination of music through analysis and active listening to repre-
sentative works of the music masters. The correlation of music with
everyday living. (Formerly 108).

112. INTRODUCTION TO MUSIC 2 hours
Development of the skills of ear training and sight singing, and voice
culture through the use of songs suitable for the school program. (For-
merly 109).

113. MUSIC EDUCATION 2 hours
Music activities, music materials and literature, unit planning and
teaching methods and skills for the different age groups from kinder-
garten to junior high school. This includes singing, rhythmic, creative
and listening experiences. (Formerly 110).

201, 202, 203. MUSIC HISTORY AND APPRECIATION 9 hours
Open to all students.
A survey type course stressing listening experience rather than the
technicalities of musical development in history. The first quarter
covers material inclusive of the seventeenth century. The second quar-
ter includes music of the eighteenth and early nineteenth centuries.
The third quarter treats of music from the Romantic period to the
present time. All three quarters present some rudiments in musical
analysis and score reading. The aim of the Course is to equip the stu-
dent with the tools necessary to a more full and intelligent enjoyment
of good musical literature.
Prerequisite: Either 201 or 202 is necessary as a prerequisite for 203.

211-212-213. THEORY 9 hours
Altered chords, non-harmonic tones, chromatics, and advanced modu-
lation added to the previous year of Theory. Analytical technique of
music compositions and the study of Musical Form from the motive
and song-form to the sonata and contrapuntal forms. (Formerly 104,
105, 106).
Prerequisite: One year of Theory.

301-302-303. CONDUCTING 6 hours
Courses in principles of conducting concluding with conducting
choral, band and orchestra scores. (Formerly 140, 141, 142).
311. PRIMARY MUSIC METHODS AND OBSERVATION 4 hours
   Two observations each week are required. (Formerly 202).
   Prerequisite: Theory 213.

313. INTERMEDIATE MUSIC METHODS AND OBSERVATION 4 hours
   Materials and methods in vocal music. Four observations each week are required. (Formerly 203a).
   Prerequisite: Primary Music Methods 311.

321-322-323. CLASS VOICE  6 hours
   A Course designed for prospective teachers of Vocal Music in the public school. (Formerly 207, 208, 209).

332. SUPERVISED TEACHING IN THE PRIMARY GRADES 6–12 hours
   (Formerly 213).
   Prerequisite: Primary Music Methods 313.

341-342-343. INSTRUMENTAL CLASS 6 hours
   Courses designed for prospective teachers of Instrumental Music in the public school. (Formerly 217, 218, 219).

351-352-353. HISTORY AND APPRECIATION 9 hours
   These Courses deal with the origin and development of music, studied from an appreciative basis. (Formerly 153, 154, 155).

380. SUPERVISED TEACHING IN THE INTERMEDIATE GRADES 6–12 hours
   See Education 380.
   (a) Practice teaching in vocal music.
   Prerequisite: Intermediate Music Methods 313.
   (b) Practice teaching in instrumental music.
   Prerequisite: Intermediate Music Methods 313.

402. JUNIOR AND SENIOR HIGH SCHOOL METHODS 4 hours
   Materials and methods in instrumental music; four observations are required each week. Organization and management of bands, orchestras, and choirs in the junior and senior high school. Instrumental classes, voice classes, substitution of parts, repertoire, public performances. Observation of bands, orchestras, and choirs in the public schools. (Formerly 313b).
   Prerequisite: Intermediate Music Methods 313.

421. INSTRUMENTATION  3 hours

422. ORCHESTRATION  3 hours
423. **Advanced Orchestration** 3 hours
Courses designed to give the public school Music instructor in the instrumental field of music a thorough knowledge of the instruments of the orchestra and band, and the arrangements of music for complete school orchestras and bands. *Formerly 250, 251, 252.*

431. **Counterpoint** 3 hours

432. **Choral Arranging** 3 hours

433. **Choral Arranging** 3 hours
Courses designed to give the public school Music instructor in the vocal field of music the technique of contrapuntal writing, and the arranging of music for the school choir, glee clubs, and vocal organizations. *Formerly 285, 286, 287.*

440. **Special Problems** 1–3 hours
Open only to Seniors who are majors in Music.

441-442-443. **Band and Orchestral Instruments** 6 hours
Courses designed to give the prospective teacher of Vocal Music a general knowledge of the playing technique of the instruments in the string choir, woodwind choir, and the brass choir. *Formerly 220, 221, 222.*

480. **Supervised Teaching in Junior and Senior High School** 6–12 hours
See Education 480.
(a) Practice teaching in Vocal Music.
*Prerequisite:* Methods and Observation 402.
(b) Practice teaching in Instrumental Music. *Formerly 215.*
*Prerequisite:* Intermediate Music Methods 313b.

**Philosophy and Religion**

**Professor Tinsler, Professor Champlin, Mr. Hodges**

C-31, C-32, C-33. **Historical Study of Philosophy and Religion** 3 hours
A study of religion and philosophy as a developing body of convictions by which man has attempted, in every age, to solve the problems and mysteries of life. A one-year unit of study designed and recom-
mended for meeting the Philosophy-Religion requirements for graduation.

PHILOSOPHY

In the Department of Philosophy a search is made for a reasoned concept of the universe and of man's place in it. Assumptions are examined and conclusions evaluated. The goal is the achievement of the principles of straight thinking for the living issues of both personal and social life today.

An interdepartmental concentration of forty-seven hours in this field exclusive of the C-31, 32, 33 unit is offered with the following Courses: Biblical Literature and Religion 241, 242, 243, 301, 302, 303; Philosophy 301, 303; Psychology 201 and Sociology 301, or 333, plus six hours of electives within the Department.

301. INTRODUCTION TO PHILOSOPHY 5 hours

Presenting philosophy in the light of its main task of "integrating the piecemeal knowledge of the day and giving men a comprehensive view of life and the world." A view of man in relationship to the living issues of today.

302. LOGIC 5 hours

The study of "how to think straight." A constructive study of mental processes; fallacies in logic; analysis of argument and proof; deductive and inductive reasoning; the proper organization and presentation of ideas; the limitation and the expression of knowledge.

303. ETHICS 5 hours

Morality and the problems of conduct. Evaluation of proposed standards of judgments; the search for a suitable standard and its application to personal, social and political problems. Especially designed for teachers and pre-professional students, but open to all Junior and Senior students.

400. PHILOSOPHY OF RELIGION 3 hours

A constructive study and discussion of the philosophy underlying such religious concepts as God, soul, freedom, prayer, destiny, evil, and immortality. Credit applicable to either Philosophy or Religion. Scheduled upon sufficient demand.
411. History of Ancient and Medieval Philosophy  
A study of the views of the philosophers of the past, beginning with the early Greeks, presenting them as pioneers in the unexplored fields of thought and analyzing their contributions to contemporary concepts.

412. History of Renaissance and Modern Philosophy  
A continuation of Course 411: a study of the philosophies from the medieval period to approximately the beginning of the 20th Century.  
Prerequisite: 301 or 411.

413. Contemporary Schools of Philosophy  
A study of current philosophies as they face an attempt to meet adequately the chief problems of modern life.  
Prerequisite: 301 or 411 and 412.

440. Problems in Philosophy  
Research or special projects for Seniors prepared to do special work in Philosophy. By arrangement.

RELIGION

Believing that anything which existed in history can be studied historically, the historical (or objective) approach to the study of Religion is used, presenting the figures of Bible History and Religion as real people in real life situations, facing real problems and finding real solutions through their religious insights. The Courses are neither sectarian nor dogmatic but, instead, aim to give the student the factual background for his own interpretation of a vital faith.

BIBLICAL LITERATURE AND RELIGION

100. Introduction to Religion  
Designed for Freshmen; presenting religion as the vital experience and growing conviction of real people facing real problems in real life situations, with a careful examination of the contrast between the religion of primitive and of advanced cultures. Recommended to meet the minimum requirements of students seeking professional degrees in Pharmacy, Engineering, and Law. May be used toward meeting any requirement in Religion.

101. Bible Customs and Manners  
Prepares the background and local color of the Biblical narrative, with special attention being given to the social customs and folkways peculiar to the Near East.
102. **What Religion Is and Does**  
3 hours  
Leads the student in seeking the broadest and most basic definition of religion and how it applies to his problems of life, both personal and social.

103. **The Message of Jesus Christ**  
2 hours  
Special attention is given to the personal and social application of His teachings. A course in practical principles rather than in theology.

**241, 242, 243. Bible History**  
9 hours  
The Fall and Winter Quarters deal with Old Testament history, presenting the cultural and religious development of the Hebrew people from early times through the United Kingdom, Division, Exile and Restoration to the time of King Herod. The Spring Quarter presents New Testament history through the writing and canonizing of the New Testament. Special attention is paid to the life of Jesus with consideration of the social and political setting into which He was born and its relation to His life and teaching.

301. **The Life and Letters of St. Paul**  
3 hours  
A study of the development of the early Church and the relation of St. Paul to this work as revealed in the Book of Acts and in the Letters of Paul.

302. **The Christian Church in History**  
3 hours  
A study of the Church in history, with consideration of the significant individuals and events in the Christian Church from the Apostolic Age to the present day and their relation to the course of general history.

303. **Comparative Religion**  
3 hours  
The fundamental religious beliefs, customs and institutions of the major living religions. A knowledge of the general aim and nature of religion is sought.

400. **Philosophy of Religion**  
3 hours  
A constructive study and discussion of the philosophy underlying such religious concepts as God, soul, freedom, prayer, destiny, evil, and immortality. Credit applicable in either Philosophy or Religion. Scheduled upon sufficient demand.

401. **Psychology of Religion**  
3 hours  
A study of the religious behaviour of mankind; the need of the spiritual in man’s adjustment to his world, and the close correlation
of many religious teachings with the tenets of modern scientific psychology. Applicable toward the field of concentration in either Religion or Psychology.

440. Problems in Religion 1–3 hours
Research or special projects for Seniors prepared to do special work in the field of religion. By arrangement.
Courses 301, 302, 303, are sometimes alternated with Philosophy 411, 412 and 413.

Physical Education

Professor Lamb, Associate Professor English,
Assistant Professor Nettleton

Some form of physical activity is required of all students during their first two years in the University. The nature and amount of work to be taken depends upon physical condition as revealed by a careful examination and by efficiency tests given at the beginning of the school year. A varied program of elective and required activities is provided, which aims to secure and maintain the highest degree of individual and social efficiency both during and after college life.

The elective courses are both theoretical and practical. A strong intramural sports program is designed to provide some form of activity for nearly every student on the campus.

REQUIRED COURSES

Physical Education two hours a week. One credit each quarter for the first six quarters.

First Year. This work is given both out-of-doors and in the gymnasium. It is systematically graded and arranged to fit the needs and interest of the individual. Corrective work, for those who need it, and the fundamentals of natural gymnastics and games are stressed.

Second Year. A continuation of the first year program, with greater emphasis on play activities.

101-102-103. Physical Education
Men—Gymnasium and outdoor classes in season, natural gymnastics, informal play. Freshmen.
Women—A course in natural gymnastics including games and sports in season, dancing. *Freshmen.*

201-202-203. **Physical Education**
Men—Continuation of Course 103 with team games and apparatus added. *Sophomores.*

Women—A continuation of Course 103. *Sophomores.*

**ELECTIVE COURSES**

**Intramural Sports.** Ample athletic fields and a splendid gymnasium afford exceptional facilities for an intramural program that is sufficiently broad and varied to offer some form of activity for practically all University students. In their proper seasons, the following sports are offered: football, basketball, free throwing, baseball, speedball, handball, playground ball, volleyball, tennis, wrestling, boxing, track, touch football, golf, horseshoes and swimming.

**PROFESSIONAL CURRICULUM FOR TEACHERS**

For students who wish to specialize in the field of Health and Physical Education, a four-year professional curriculum is offered, leading to the degree of Bachelor of Science in Education, and to a special state four-year Provisional Certificate.

101a-102a-103a. **Physical Education for Majors** 3 hours

201a-202a-203a. **Physical Education for Majors** 3 hours

Courses 101a to 203a inclusive are required of all students majoring or minoring in Physical Education in place of Courses 101 to 203. These Courses consist of natural activities in season, including games, stunts, tumbling, clogging, folk and character dancing, natural dancing, pageantry for women and combat activities for men. These Courses apply toward Physical Education major. Men.

110. **Personal and General Hygiene** 3 hours

A course designed to cover the various phases of personal hygiene and health from the individual aspect, with emphasis on preventive measures. Each quarter. *(Formerly 115).*

112. **First Aid and Safety** 2 hours

Lectures, discussion and practice in the giving of first aid in cases of emergency. Methods of scientific training and conditioning of athletic
teams. The American Red Cross First Aid Certificate may be obtained by students who pass a satisfactory examination. *(Formerly 158).*

113. **Advanced First Aid**  
This is a course designed to give instruction and advanced training in first aid. Upon satisfactory completion of this course the Advanced First Aid Certificate and Instructor Training Certificate will be awarded. *(Formerly 159).*  
**Prerequisite:** First Aid and Athletic Training 212.

120. **Nutrition for Nursing**  
A course designed to teach the nurses the importance of nutrition to her own health and that of her patient. Lecture: the study of the role of food in the body, the nutritive requirements of individuals and the modifications required during the stages of development from infancy to later life. Laboratory: theoretical and practical knowledge in meal planning and the selection, care, preparation and service of basic foods.

121. **Health Education**  
The relation of hygiene to home and community life, including a study of sewage disposal, refuse disposal, transmission and control of diseases. *(Formerly 117).*

122. **Health Education**  
This course deals with the health program of the public schools, and the teaching of habits, attitudes and knowledge conducive to good health. *(Formerly 151).*

123. **Health Education**  
A course for the special teacher and supervisor of Physical Education, dealing with the sanitation of school buildings, surveys of various school systems, teachers' health, and other health problems arising in a school system. *(Formerly 152).*

133. **Theory and Practice of Plays and Games**  
The need, purpose, and function of play in education are studied. Activities adaptable to various levels of the elementary and secondary schools are studied. Two hours of theory and two hours of laboratory per week. *(Formerly 156).*

223. **Body Mechanics**  
This course deals with the general body mechanics of the human organism, furnishing the student an opportunity to study and analyze
the activities of the physical education program in their relation to coordination and the proper body mechanics. (Formerly 155).

Prerequisite: Physiology and Anatomy 331 and 332.

301-302-303. PRINCIPLES AND METHODS OF PHYSICAL EDUCATION 4 hours

Lectures, demonstrations, and practice. An examination of the principles underlying modern practices in physical education, from the standpoint of general education. The methods used in the natural program of physical education, such as the teaching of fundamental skills of tumbling and stunts, basketball, indoor baseball, speedball, volleyball, handball. Class, three hours; practice, two hours.

321a. METHODS IN COACHING FOOTBALL 3 hours

A course covering in detail, equipment, fundamentals of the game, kicking, passing, handling the ball, tackling, blocking, etc.; individual position play; discussion of various types of offensive and defensive formations now in use, and the merits of each; strategy and generalship. (Formerly 221a).

321b. METHODS IN COACHING FOR WOMEN 3 hours

This Course is to prepare major and minor students in Physical Education to coach Athletics in secondary schools. The Course covers presentation of technique, basic principles, team play and methods for instruction of hockey, soccer, and speedball. (Formerly 221b).

322. METHODS IN COACHING BASKETBALL 3 hours

Men—Special emphasis is given to the fundamentals, passing, shooting, dribbling, feinting, and pivoting; to the various styles of offense and defense used by leading coaches; to equipment; to the conditioning of a team; and to the handling of a team in games. Lectures, reports, demonstration and practice.

Women—Volleyball, basketball, and handball. (Formerly 222).

323. METHODS IN COACHING BASEBALL AND TRACK 3 hours

This Course covers pitching, catching, batting, fielding, baserunning, individual position and team play in baseball. It takes up the best methods and forms for all of the events in track and field. Lectures, reports, demonstrations, and practice.

Women—Baseball, tennis, track, and field sports. (Formerly 223).

331-332-333. ADVANCED COACHING PRACTICE 3—9 hours

These Courses are designed to give students who have had Courses 321, 322 and 323 an opportunity to do actual coaching under supervi—
sion, in all sports in season. Hours arranged. (Formerly 271, 272, 273).

341. Football Officiating 3 hours
   This course includes the study of the football rules from the stand-
   point of the player, coach and official.

342. Basketball Officiating 3 hours
   Same description as Course No. 341 except as it applies to basketball
   officiating.

343. Athletic Training and Conditioning 3 hours
   Designed to meet the need of the high school coach. It deals with
   the training procedures and conditioning of athletic teams for all
   sports. Special emphasis is placed upon treatment of athletic injuries.

401. Organization and Administration of Physical Education—Men and Women 2 hours
   A course dealing with the objectives, principles, and methods of
   organization and administration of Physical Education in elementary
   and secondary schools and colleges. It includes management of athletic
   sports, games, and contests, and intramural athletics. (Formerly 254).

402. Normal Diagnosis 2 hours
   This Course includes recording of personal and family history,
   methods of making general health examinations, including special
   methods of examining the eyes, ears, nose, throat, spine, feet; weighing
   and measuring, and a limited study of corrective exercises for various
   postural defects. (Formerly 252).

403. History of Physical Education 2 hours
   This Course traces the evolution and development of physical edu-
   cation through ancient and modern times. It demonstrates the close
   relationship existing between certain elements in civilization and the
   status of physical education in that civilization. (Formerly 260).

440. Problems in Physical Education 1–3 hours
   This Course deals with specific problems in physical and health edu-
   cation and is open to properly qualified students. Time to be arranged.
   (Formerly 265).

480. Student Teaching 9 hours
   See Education 480.
Physics

Professor Benedict, Associate Professor Abele

The primary aim of the Physics Department is to offer courses that will stimulate scientific thought, train the student to reason from fundamental experimental facts, further the student’s desire to continue scientific investigation, and meet the needs of those students who are interested in physics for its cultural or its vocational value. Emphasis is placed on clear concepts, accurate thinking, and the complementary nature of experiment and theory.

The Department aims to give a training sufficiently broad to enable the student to appreciate the physics of popular scientific articles, to teach Physics in the public school, to apply physics in Engineering, Medicine and other sciences, and to pursue graduate work to the best advantage.

The Physics field of concentration must include Courses 301, 302, 313, 333 and at least two hours each of 310, 320, and 330. For those contemplating graduate work in Physics, thirty-five hours of Mathematics should be completed. An introductory course in Philosophy and a reading knowledge of German are strongly recommended. A year of Economics is recommended and a year of General Chemistry should be completed.

221. General Physics: Mechanics of Solids and Fluids 4 hours

222. General Physics: Electricity and Magnetism 4 hours

223. General Physics: Sound, Heat and Light 4 hours

These Courses are open to any persons except Engineers. They are required for pre-Medical and pre-Dental students. Course 221 and either 222 or 223 are required for pre-Pharmacy students. Three class periods and two hours of laboratory. 221 should precede 222 and 223. (Formerly 211, 212, and 213).

Prerequisite: 1 year of college Mathematics, or permission of instructor.

241. General Physics: Mechanics of Solids and Fluids 5 hours

242. General Physics: Electricity and Magnetism 5 hours

243. General Physics: Sound, Heat and Light 5 hours

A series of courses designed for Engineers and Science majors. Four
class periods and three hours of laboratory. 241 should precede 242 and 243. (Formerly 201, 202, 203).

Prerequisite: High school Physics and Mathematics 133, Calculus to be taken concurrently.

250. DESCRIPTIVE ASTRONOMY 3 hours
Study of the celestial bodies including distance, motion, size, distribution of planets, stars, spiral nebulae, and modern theories regarding their origin and evolution. Three class periods and one hour of laboratory.

301. ANALYTICAL MECHANICS 5 hours
A course covering the principles of mechanics as applied to statics; also a study of dynamics of particles and bodies. (Formerly 213).

Prerequisite: Physics 221 or 241 and Calculus 203.

302. MODERN PHYSICS 3 hours
A lecture and quiz course involving fundamental questions on the nature of things, such as atomic structure, electron theory, quantum theory, and the theory of relativity etc. (Formerly 220).

Prerequisite: General Chemistry and Physics 221, 222, 223, or 241, 242, 243.

312. ELECTRONICS 5 hours
Electron ballistics, thermionic emission, vacuum tubes and characteristics, rectifiers, amplifiers, oscillators, modulators, demodulators, and electron tube instruments. Four class periods and two hours of laboratory.

Prerequisite: Calculus and Physics 221, 222, 223 or 241, 242, 243.

313. ELECTRICITY AND MAGNETISM 5 hours
A study of electric and magnetic fields, dielectrics, inductance, capacitance, direct and alternating current circuits and their applications. (Offered in 1954-55 and in alternate years).

Prerequisite: 221, 222 or 241, 242 and Calculus.

310. ADVANCED LABORATORY: MECHANICS 1–3 hours

320. ADVANCED LABORATORY: LIGHT, HEAT, SOUND 1–3 hours

330. ADVANCED LABORATORY: ELECTRICITY 1–3 hours
Credit is given in Courses 310, 320, and 330 according to the amount of work done. A quiz is given on assigned readings for each experi-
ment. Not more than four hours credit may be earned in any one of the three quarters. Offered every quarter.

Prerequisite: 221, 222, 223, or 241, 242, 243, and Mathematics 203.

333. LIGHT
The laws of physical and geometric optics; optical instruments, reflection, refraction, absorption, dispersion, interference, and polarization. A study of lenses, prisms, mirrors, gratings, and instruments used in the study of light. (Offered in 1953-54 and in alternate years).

Prerequisite: Physics 223 or 243 and Calculus.

353. ASTRONOMY
Study of the celestial bodies including distance, motion, size, distribution of planets, stars, spiral nebulae, and modern theories regarding their origin and evolution. Four class periods and one hour of laboratory. For students who are interested in a mathematical treatment of the fundamentals of astronomy. The applications of physics to astronomy are stressed.

Prerequisite: One year each of college Physics and Mathematics.

402. ADVANCED LIGHT
An Honor Course in physical optics and spectroscopy. There are no regular class recitations. Reports are made by the student in individual conferences. Only superior students may register for this Course. Consent of the Head of the Department is necessary. (Formerly 221).

Prerequisite: Physics 241, 242, 243, and Calculus 203.

412. ADVANCED ELECTRICITY
An Honor Course in electricity and magnetism. Requirements the same as for Course 402. Only one Honor Course open each year. (Formerly 222).

Sociology and Psychology

PROFESSOR MARKLE, PROFESSOR COXE

The purpose of this Department is to give its students an understanding of human relationships, institutions, and social processes; to familiarize them with the nature and causes of social problems; to acquaint them with the facts and laws of behavior and mental life, primarily of man; to enable its students to develop wholesome per-
sonalities and to make adequate social adjustments; and to give the students deeper insight into the requirements of intelligent citizenship and useful participation in community life.

In order to complete a field of concentration in this Department with emphasis in Sociology the student must complete forty-five hours in Sociology. In addition fifteen hours must be completed within the Division of Social Sciences, in departments other than the Department of Sociology.

In order to complete a field of concentration in this Department with emphasis in Psychology, the student must complete forty-five hours in Psychology. Psychology majors must complete one year of General Biology.

**PSYCHOLOGY COURSES**

201-202. **General Psychology** (a two-quarter unit) 6 hours
A general survey of psychological facts and principles stressing human experience and behavior.

203. **Experimental Psychology** 3 hours
A laboratory course designed to acquaint the student with the important areas of experimentation in psychology, with emphasis upon methodology and problems of experimental design.

*Prerequisite:* Psychology 201, 202.

213. **Educational Psychology** 3 hours
Interpretation of the fundamental psychological facts, principles, and theories applying to education; pupil growth, development and adjustment; problems of learning; relative influence of nature and nurture, statistical procedures.

*Prerequisite:* Psychology 201, 202 or consent of instructor.

241-242. **Psychology for Nursing** 5 hours
A general survey of psychological facts and principles stressing human experiences and behavior.

300. **Child Psychology** 3 hours
Characteristics of the child at different levels of maturity; physical, mental and emotional growth; growth and organization of meanings; control of social and ethical behavior; development of personality.

*Prerequisite:* Psychology 201, 202 or consent of the instructor.
311, 312. Psychology of Personality (a two-quarter unit) 6 hours
A study of the nature and development of personality, and methods of adjustment; discussion of the various theoretical approaches to the psychology of personality.
Prerequisite: Psychology 201, 202.

313. Testing and Guidance 3 hours
A study of the basic principles, purposes, and psychological problems involved in interviewing; survey of psychological tests, including projective; actual experience in interviewing and testing.
Prerequisite: Psychology 201, 202, 311, 312.

321, 322. Social Psychology (a two-quarter unit) 6 hours
A study of social behavior and social adjustment. The effect of the social environment upon the development of personality. The relation of social and psychological laws to problems of the community.
Prerequisite: Psychology 201, 202.

323. Psychology of Business and Industry 3 hours
A study of the principles and applications of psychology as used in business, industry, and personnel work.
Prerequisite: Psychology 201, 202.

333. Applied Psychology 3 hours
The application of psychological principles to problems of modern life; clinical practice; personnel work, home life; education; industry; business law and criminology; medicine; social reform.
Prerequisite: Psychology 201, 202.

401. Psychology of Religion 3 hours
For description, see Department of Religion.

421, 422. Abnormal Psychology (a two-quarter unit) 6 hours
Study of behavior pathology; the neuroses and psychoses; various theoretical approaches to the problem of etiology.
Prerequisite: Psychology 201, 202.

423. Psychology of the Exceptional Child 3 hours
The classification of the non-typical school child; the use of the school and other resources for meeting his needs.
Prerequisite: Psychology 201-202 and 300 or 215.

440. Psychological Problems 1–3 hours
Minor investigation. Open only to qualified seniors. By arrangement.
SOCIOMETRY COURSES

201. COURTSHIP, MARRIAGE, AND THE FAMILY 3 hours
A practical course in the study of adjustment in courtship, preparation for marriage and family living.

202. SOCIAL FACTORS IN MARRIAGE ADJUSTMENT 3 hours
An analysis of the factors in modern life affecting the stability of the family. A critical study of the biological and social factors in marital adjustment.

203. LIFE AND FAMILY RELATIONSHIPS 3 hours
A study of the effects of early family relationships and the individual's day by day experiences upon the child in American society.

241-242. SOCIOLOGY FOR NURSING 5 hours
A study of the phenomena of human relations, including the nature and import of sociology, socialization, social ideals and social control.

300. POPULATION PROBLEMS 3 hours
The composition of population according to sex, age, color; its distribution in the territory of the U.S.; fertility, mortality. The problems of mate selection, birth control, standard of living, and migrations are discussed.

301. SOCIAL DISORGANIZATION 3 hours
The impact of social change and major lags leading to social breakdown; population, race, family, rural and urban problems.

302. SOCIAL PATHOLOGY 3 hours
Social pathology, as it concerns our own society, including the study of such problems as poverty, mental disease, crime, prostitution, narcotics, alcoholism, public health and suicide.

303. SOCIOLOGY OF CONFLICT 3 hours
A study of conflict in human behavior and in social change; class, race, and industrial conflict in contemporary society; sociological aspects of war.

311. EDUCATIONAL SOCIOLOGY 3 hours
A study of the sociological foundations of education; the school as a social institution.

321. CRIMINOLOGY 3 hours
A consideration of the problems of crimes and criminals. Special attention is given to the factors conducive to the making of criminals.
322. Penology 3 hours
An analysis of the theories of punishment; historical and modern treatment of criminals; modern policies for prevention of crime, probation and parole.

323. Juvenile Delinquency 3 hours
A study of the factors associated with juvenile delinquency, characteristics of delinquents, juvenile court procedures, correctional training in institutions, plans and programs for the prevention of delinquency.

331. Cultural Anthropology 3 hours
A study of preliterate culture, its relation to geography, biology, and psychology. Study of primitive religion, family patterns, and cultural variations.

332. Social Characteristics in World Societies 3 hours
A comprehensive study of three societies, presenting the essential characteristics of a society in terms of its everyday workings and organization.

333. Social Change in World Societies 3 hours
A comprehensive study of three societies, presenting the social change which is taking place on a world-wide scale.

400. Human Geography 3 hours
The interaction of man and his physical environment.

402. Social Control 3 hours
A study of the methods and agencies of social control in contemporary society.

403. Race Relations 3 hours
A study of the phenomena which arise when groups of people who differ racially or culturally come into contact with one another.

404. Marriage and Family Counseling 2 hours
A course dealing with the development of marriage and family counseling and the details of its practice. This course is open only to seniors or mature persons with the approval of the instructor.
Prerequisites: Sociology 201, 202, 203.

411. Rural Sociology 3 hours
Composition of rural population, the rural family and standards of living, rural institutions and social processes, fundamental differences between rural and urban groups.
412. **Urban Sociology**  
3 hours  
A study of cities, their growth, ecology, population trends, personality types, characteristics, attitudes and institutions.

413. **Industrial Sociology**  
3 hours  
A study of the social organization of industry and human relations in the work plant. Problems of conflict and cooperation in the work group and the relation between the work group and the community are emphasized.

421. **Public Opinion and Propaganda**  
An analysis of the nature and sources of contemporary public opinion and the nature, extent, and direction of propaganda in contemporary society.

430. **Conference Leadership in Human Relations**  
A course designed to aid participants in better use of conference leading techniques by furnishing them with basic information regarding techniques and by offering them an opportunity to lead supervised practice discussion.

440. **Problems in Sociology**  
1–3 hours  
Minor investigation. Open only to qualified Seniors by arrangement.
College of Engineering

LAWRENCE HARRY ARCHER, Dean

ACADEMIC RECOGNITION

The College of Engineering of Ohio Northern University is on the list of approved engineering colleges of the Ohio State Board of Registration for Professional Engineers and Surveyors. All of the departments, Civil Engineering, Electrical Engineering, and Mechanical Engineering, of the College are accredited by the Engineers' Council for Professional Development.

PURPOSE

In keeping with the avowed purpose of Ohio Northern University, it is the aim of the College of Engineering to develop in the student a high standard of undergraduate proficiency in the areas of subject matter basic to all engineering together with such technical information and education in the essentials of his chosen branch of the profession as will enable him to meet the highest standards of professional performance and citizenship rightfully to be expected of the engineering graduate.

HISTORY

The history of the College of Engineering of Ohio Northern University dates from the graduation of its first class in 1882 when one man was graduated with the degree of Civil Engineer. From that date the growth was rather irregular with graduates fairly constant running above and below twenty but growing slightly until 1898 when an additional department, the Electrical Engineering Department, graduated its first "Electrical Engineer." In that year the total enrollment was 63 with a graduating class of eleven, nine Civil Engineers and two Electrical Engineers. In 1904 the present Department of Mechanical Engineering had its first graduate.

During the seventy-five years of its existence the College of Engineering of Ohio Northern University has had more than twenty-four hundred graduates. Always has the student been in small classes where individual attention was received. Today this policy is continued. The interests of the student are the first consideration of staff and faculty at Ohio Northern University.
ADMISSION

An applicant for admission to the College of Engineering should write for application forms to the Admissions Office of the University or to the Dean, College of Engineering. See "How to Apply for Admission," page 13 of this bulletin.

Candidates of good moral character may apply for admission upon one of the following plans:

1. Certificate. It is highly recommended that each applicant have the following course distribution from a first grade high school or accredited academy.

   English ..................................... 4 years
   Mathematics .................................. 4 years
   Science ....................................... 4 years
   Latin or other language .................... 2 years
   Others ........................................ 2 years

   In this distribution in mathematics, two units should be in algebra; one and one-half, geometry; and one-half, trigonometry. The sciences should include general science, biology, chemistry, and physics.

   Those people who meet the general University admission requirement and are found to be deficient in mathematics whether it be in actual units or in background, will be required to make up the material without college credit. This will take at least one Summer School above the normal requirement and in most cases result in a five-year program.

   So that proper placement according to background and ability can be made, a refresher course in English, mathematics, and science will be held each year for first year students. See the University calendar for specific dates. All entering first-year students are urged to attend. Students who meet the higher standard on the proficiency examination in algebra and trigonometry may have the first two mathematics courses waived in their first year.

2. Examination. Candidates who are not graduates of first grade high schools or are deficient in some of the units for admission may be admitted upon examination. At least one summer session will be required of the students who must make up deficiencies in entrance credits.
3. **Advanced Standing.** An applicant from another college seeking advanced standing must present evidence of honorable dismissal and an official transcript of his college record. Some credit may be allowed for practical experience in Drafting and Shop Work. Applicants for such credit must submit a satisfactory statement from their employer giving time of service, nature of work, name and address of employer.

Advance credit from other institutions of higher learning will not be given for more than 162 quarter hours (108 semester hours). The work must be "C" level or better.

4. **Special Student.** Mature persons not candidates for a degree may be admitted, if on consultation the Dean is satisfied that they have sufficient preparation to pursue the work successfully. Such applicants are classified as Special Students. Upon successful completion of their work, a certificate showing the course of study pursued and the amount of work covered is presented to them.

The standard load in the College of Engineering is listed under each department. Extra hours based upon scholarship attainments may be granted by the Dean upon recommendation of the student's advisor.

**PROBATION**

Any student making less than 2.0 quality points per scheduled hour for the quarter is warned of his low academic standing. If the student should again fail to meet this standard in the quarter for which he is put on warning, he is put on probation for the following quarter of residence with a reduced schedule. Failure to meet this academic requirement of 2.0 for such reduced schedule may subject the student to dismissal.

**CLASSIFICATION**

The minimum requirements for Sophomore standing are forty-six credit hours of which fifteen hours must be in freshman mathematics and an accumulative point average of 2.0; for Junior standing, ninety-seven credit hours of which twenty-nine hours must be in mathematics, fifteen hours in physics which presupposes calculus either concurrently or as a prerequisite, and an accumulative point average of 2.0; for Senior standing, 150 credit hours and an accumulative point average of 2.0.
GRADUATION AND DEGREES

Two hundred thirty-four hours of which six are in physical education and six in chapel are required for graduation. Each student must participate in his professional and technical student organization while in attendance. He must have a scholarship rating of at least two quality points for each credit hour scheduled. A student cannot be a candidate for more than one degree at any one time.

A student must spend his Senior year in residence and must take at least forty-five quarter hours for final credit toward graduation.

The University is empowered to grant the customary academic degrees, which in the College of Engineering are Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, and Bachelor of Science in Mechanical Engineering.

REGISTRATION AS A PROFESSIONAL ENGINEER

In order to practice as a Professional Engineer after graduation it is necessary to become registered by the state. Complete information on this subject can be obtained by corresponding with the College of Engineering of Ohio Northern University or by writing to the Secretary of the Board of Registration for Professional Engineers and Surveyors, 21 West Broad Street, Columbus, Ohio.

Since four years of practical experience in Engineering are required beyond the college education before full registration as a Professional Engineer can be obtained, it necessarily becomes an important factor in choosing Professional Engineering as a career.

ENGINEERING BUILDING

The College of Engineering is housed in a three story, thirty-three room brick structure recently rebuilt, enlarged, and rearranged to improve its functionality for the use now made of it. The rebuilding has made special provision for well-equipped drafting rooms and laboratories, rearranged classrooms with completely new heating, lighting, ventilating, seating, and blackboard facilities.

The offices of the Engineering Staff and Faculty are housed in the same building which is located separately from the other colleges of the University.

Some of the laboratories, rooms, and shops are as follows: Machine Shop, Carpenter Shop, Testing Materials Laboratory, Fluid Mechanics Laboratory, Tool Crib, Concrete Laboratory, Soils Laboratory, Steam
Laboratory, Internal Combustion Engine Laboratory, Air-Flow Laboratory, Heating and Ventilating Laboratory, Electronics Laboratory, A.C. Power Laboratory, D.C. Power Laboratory, Surveying Room, Senior Design Room, Visual Aid Room, and Freshmen Drawing Room.

PROFESSIONAL AND TECHNICAL ORGANIZATIONS

All engineering students are expected to participate in two of the following student organizations in order to complete their graduation requirements. Satisfactory completion of this portion of the graduation requirement is certified by the respective organization advisor.

The student branch of the Ohio Society of Professional Engineers embraces all departments of the College of Engineering. Professional Standards, Professional Registration, Ethics and the Engineer's place in the community are some of the things inculcated by the student branch of the Ohio Society of Professional Engineers which is an affiliate of the National Society of Professional Engineers.

The Ohio Northern Student Chapter of the American Society of Civil Engineers holds monthly meetings. All Civil Engineering students are eligible for membership. Activities of A.S.C.E. are helpful in rounding out the student's program. This group is affiliated with the Toledo Section of the American Society of Civil Engineers.

The American Institute of Electrical Engineers Student Branch holds monthly meetings. At these meetings original papers and papers printed in the Proceedings of the American Institute of Electrical Engineers are read and discussed. All students interested in Electrical Engineering are eligible for membership. The student chapter enjoys a very close association with the Lima Section of the American Institute of Electrical Engineers.

The Ohio Northern Student Section of the American Society of Mechanical Engineers is organized to sponsor the discussion of mechanical engineering in all its many applications. Meetings are held once each month. Members are urged to become "enrolled students" in one or more of the several national and international technical societies in this field. The student branch is allied with the Toledo Section of the American Society of Mechanical Engineers.

PRE-ENGINEERING CURRICULA

Since the first two years of any particular curriculum in engineering is practically the same, it is possible to offer pre-engineering in all fields. As soon as the pre-engineering student decides where he or she
will get his or her degree, the program is varied so that it will conform to the schedule as listed in the catalog of that institution.

FRESHMAN AND SOPHOMORE ENGINEERING CURRICULUM

PROFESSOR ARCHER, ASSISTANT PROFESSOR HILLERY,
LIBERAL ARTS FACULTY

During the first one and two-third years all Engineering students follow the same general program. All beginning Sophomores and transfer students who have not had the first course in Surveying are required to attend the Surveying Camp. Except for advisory purposes, it is not necessary for the student to select a branch of Engineering until the start of the third quarter of the Sophomore year.

No sharp line of distinction can be drawn in the fundamental training of Civil, Chemical, Electrical and Mechanical Engineers for the reason that the sciences basic to Engineering – Mathematics, Physics, Chemistry, and some Applied Science – are essential in all branches of Engineering.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education (P.E. 101, 102, 103)</td>
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<tr>
<td>Math (121, 122, 133)</td>
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<tr>
<td>Chemistry (111, 112, 113)</td>
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<tr>
<td>English (C-1, 2, 3)</td>
<td>3</td>
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<tr>
<td>Social Science or Humanities*</td>
<td>3</td>
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</tr>
<tr>
<td>Drawing (E. 111, 112)</td>
<td>3</td>
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<td>-</td>
</tr>
<tr>
<td>Descriptive Geometry (E. 113)</td>
<td>-</td>
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</tr>
<tr>
<td>Orientation (E. 101, 102, 103)</td>
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</tbody>
</table>

SURVEYING CAMP

Surveying I (C.E. 211) 5

* See page 130 for details.
College of Engineering

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Physical Education (P.E. 201, 202, 203)</th>
<th>FALL</th>
<th>WINTER</th>
<th>SPRING</th>
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<tbody>
<tr>
<td>Math (211, 212, 213)</td>
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<tr>
<td>Engineering Physics (241, 242, 243)</td>
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<tr>
<td>Philosophy (C-31, 32, 33)</td>
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<tr>
<td>Problems (E. 201, 202)</td>
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<tr>
<td>Shop (E. 211, 212, 213)</td>
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<tr>
<td>Elective*</td>
<td>3</td>
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<tr>
<td>Speech (272)</td>
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</tr>
<tr>
<td>Surveying II (C.E. 213) (for C.E.); (or for E.E.)</td>
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<td>5 or</td>
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<tr>
<td>Electric and Magnetic Circuits (E.E. 213); (or for M.E.)</td>
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<td>6 or</td>
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</tr>
<tr>
<td>Manufacturing Processes and Metallurgy (M.E. 203, 213)</td>
<td>-</td>
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<td>3-3</td>
</tr>
</tbody>
</table>

18 18 18-19

* See page 130 for details.

CIVIL ENGINEERING

PROFESSOR TAYLOR, ASSOCIATE PROFESSOR POTHIER,
ASSISTANT PROFESSOR HILLERY, ASSISTANT PROFESSOR LINDSEY

Although many of the former divisions have grown into separate departments, Civil Engineering offers greater opportunities than ever before. The Civil Engineer conceives, designs, and supervises the building of the projects, coordinating and utilizing all resources for all types of developments. He works in many broad fields of specialization such as: Structural Engineering, Construction Engineering, Highway and Transportation Engineering, Sanitary Engineering, Soil Engineering, Surveying, Mapping, City Managing, Consultant in Engineering, etc.

The Department is supplied with high grade instruments and appliances necessary for first class instruction and practice. The laboratories are well equipped, the drafting room large and modern, the scientific library excellent.

The Civil Engineering Department offers laboratory work in Testing Materials, Concrete, Soil Mechanics and Fluid Mechanics, as well as field work in Surveying.

In the testing of materials, laboratory equipment is available which enables the student to perform a wide variety of standard ASTM tests. This laboratory has screw gear universal testing machines, hydraulic testing units, a pendulum type torsion machine, a universal impact tester, a high speed rotary fatigue testing machine, hardness testers,
and other equipment including extensometers, compresometers and SR-4 strain gages.

The Concrete Laboratory provides for the conducting of many of the tests, standardized by ASTM and AASHO, for concrete materials, cement and mortars. A high and low temperature humidity chamber, a sieve shaker with standard sieves, a motor driven concrete mixer, concrete beam and cylinder testing machines, and a flow table together with the usual small pieces of equipment are located in this laboratory.

The Soil Mechanics Laboratory has a portable unconfined compression machine, drying oven, water bath, soil dispersion apparatus, C.B.R. apparatus, sampling equipment, permeameter and compaction outfit.

In the Fluid Mechanics Laboratory, water under constant head is supplied from a standpipe to weirs, venturi meters, orifices, displacement meters, a friction board, a flume and other equipment. Pumps of various designs are available for use on a pump test stand.

A great number of varied field exercises in surveying is provided by numerous transits, levels, plane tables, alidades, theodolites and the smaller equipment necessary for such work.

The Senior Design Room has a Friden electric calculator and several models of trusses.

The aim of this Department is to give the student a well-rounded Engineering education and to instill within the student the idea of knowing how, knowing why, and doing the best engineering job possible for his client for the least amount of money, always abiding by the Code of Ethics of the Professional Engineer.

See pages 124-125 for the program of the Freshman and Sophomore years.

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<tbody>
<tr>
<td>Statics and Mechanics of Materials I, II (C.E. 301, 302, 303)</td>
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<tr>
<td>Theory of Structures I (C.E. 313)</td>
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<tr>
<td>Geology, Fluid Mechanics, and Highways (C.E. 321, 322, 323)</td>
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<tr>
<td>Plain Concrete (C.E. 331)</td>
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<tr>
<td>Engineering Analysis and Route Survey (E. 301, C.E. 333)</td>
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<tr>
<td>Thermodynamics and Dynamics (M.E. 301, 322)</td>
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<tr>
<td>Social Science or Humanities*</td>
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* See page 130 for details.
SENIOR YEAR

<table>
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<tr>
<td>Theory of Structures II, III (C.E. 401, 402)</td>
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<tr>
<td>Structural Design I, II, III (C.E. 411, 412, 413)</td>
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<tr>
<td>Reinforced Concrete Theory I, II, III (C.E. 421, 422, 423)</td>
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<tr>
<td>Reinforced Concrete Design I, II (C.E. 422a, 423a)</td>
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<tr>
<td>Soil Mechanics, Sanitary Engineering, and Cost Analysis (C.E. 431, 432, 433)</td>
<td>4</td>
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<tr>
<td>Electrical Engineering I, II, III (E.E. 301, 302, 303)</td>
<td>3</td>
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<tr>
<td>Engineering Law (E. 403)</td>
<td>-</td>
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<tr>
<td>Social Science or Humanities*</td>
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</tbody>
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* See page 130 for details.

ELECTRICAL ENGINEERING

ASSOCIATE PROFESSOR KLINGENBERGER, PROFESSOR NAU, PROFESSOR ALDEN

Electrical Engineering is that segment of engineering whose core is built around the science of electricity and magnetism. The science of electricity and magnetism treats of the laws governing the generation, transmission, and utilization of electrical energy in either very large or minute amounts for useful purposes. Among others, the applications may take the form of radio, telephone, telegraph, television, radar, sonar, electric computers, electric control, heating, lighting, and versatile, development of mechanical motion.

The Electrical Engineering curriculum is arranged in a manner to offer a coordinated program of study whereby the student may obtain both a mental understanding and scientific working habits which will enable him to embark upon a successful professional career. In the third quarter of the sophomore year, the student embarks upon the Electrical Engineering sequence by studying the fundamentals of electricity and magnetism. From this and subsequent foundation courses which cover the basic principles of electric circuits, electronics, and machinery, the sequence branches into more specialized courses in communication and power.

The class activities are supplemented by experimental work in the laboratories. In fact, the two phases of study program are closely correlated so that one will augment the other.
The Electrical Engineering laboratories occupy three large adjoining rooms on the main floor of the Engineering Building. Each of the three laboratories is equipped with the most modern power-supply switchboards. The instrument room for the Electrical Engineering laboratories is equipped with an abundance of the newest and finest indicating instruments and other testing and measuring equipment. The Power Laboratory contains a number of transformers of convenient size, duplicate AC and DC generators and motors of various types, including those of the newest designs. The Communication Laboratory is splendidly equipped with a wide variety of test equipment, numerous bridge-type instruments, portable cathode ray oscillographs, and a new 4-element recording oscillograph.

Graduates of the Electrical Engineering curriculum may find employment in any of the following fields: radio communications, television, telephone and telegraph systems, electronics, development of electrical equipment and controls for aircraft, construction and operation of generating stations and electric power systems, installation and operation of equipment in industrial plants, design of power apparatus, manufacture and sale of electrical equipment, rural electrification, application of Electrical Engineering to agriculture, geophysical exploration in the petroleum industry, research in any of these specialized fields and teaching Electrical Engineering. There will always be job opportunities in Electrical Engineering for the man with ability and sound training.

See pages 124-125 for the program of the Freshman and Sophomore years.

**JUNIOR YEAR**

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<tr>
<th>Course</th>
<th>FALL</th>
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<tr>
<td>Alternating Current Circuits I, II and</td>
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<tr>
<td>Communication Circuits I (E.E. 311, 312, 313)</td>
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<tr>
<td>Electronics I (E.E. 323)</td>
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<tr>
<td>Statics &amp; Mechanics of Materials I (C.E. 301, 302)</td>
<td>4</td>
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<tr>
<td>Thermodynamics &amp; Heat Transfer (M.E. 301, 303)</td>
<td>4</td>
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<tr>
<td>Engineering Analysis (E. 301)</td>
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<tr>
<td>Dynamics (M.E. 322)</td>
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<tr>
<td>Modern Physics (303)</td>
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<tr>
<td>Social Science or Humanities*</td>
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* See page 130 for details.
SENIOR YEAR

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<tr>
<th>Course</th>
<th>FALL</th>
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<tbody>
<tr>
<td>Communication Circuits II and Electric and Magnetic Waves (E.E. 411, 412)</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Electronics II, III, and IV (E.E. 421, 422, 423)</td>
<td>3</td>
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<tr>
<td>Electrical Machinery I, II, and III (E.E. 431, 432, 433)</td>
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<tr>
<td>Transient Circuits, Automatic Control Systems I &amp; II (E.E. 441, 442, 443)</td>
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<td>Social Science or Humanities*</td>
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<tr>
<td>Technical Elective</td>
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* See page 130 for details.

MECHANICAL ENGINEERING

Professor Jacklin, Assistant Professor Jennings

In all Civil and Military activities, the Mechanical Engineer is called upon to originate and apply new and useful equipment to human needs. The curriculum in Mechanical Engineering presents basic studies in machine design and the uses of energy that prepare the young engineer to enter a myriad of activities.

The policy of this Department is to stress the fundamental theories and methods in the use of materials, energy, and power. Basic courses in the Mechanic Arts, Mathematics, and Science are followed; on the one hand, by courses in mechanics of materials (Statics and Dynamics) and machine design; and, on the other hand, by courses in thermodynamics, heat power, turbomachines, and internal combustion engines, together with laboratory courses wherein the principles are demonstrated.

The laboratories are well equipped to supplement the classroom instruction in the fundamentals involving the uses of energy and power. They also provide instruction in the proper procedures and techniques in instrumentation, the development of test and research projects, as well as the development of accurate technical reporting.

The Steam Power Laboratory has a steam boiler, pump, engine, two turbines, and a refrigeration machine with other necessary accessories for tests of each major unit.

The Engine Laboratory contains a Sprague 150 horsepower laboratory type electric dynamometer with two automotive type engines in position for tests. A smaller dynamometer for use with two single
cylinder test engines is nearby. In addition, there are two small Diesel-generator sets and a 150 horsepower three cylinder opposed piston Diesel engine with AC and DC generators available for testing and research work.

The Heating and Ventilating Laboratory contains four systems for domestic heating along with the accessories needed in testing.

In the Air-Flow Laboratory, the following are installed: a fan, fan duct (with wind-tunnel section), a two-stage air compressor with dynamometer drive, miscellaneous apparatus for calibrating instruments, and a fuel and lubricant test cabinet.

See pages 124-125 for program of the Freshman and Sophomore years.

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<tr>
<td>Thermodynamics, Fluid Mechanics and Heat Transfer</td>
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<tr>
<td>(M.E. 311, 312, 313)</td>
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<tr>
<td>Statics, Mechanics of Materials (C.E. 301, 302, 303)</td>
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<tr>
<td>Dynamics, Mechanism (M.E. 322, 323)</td>
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<td>M.E. Laboratory I, II, III (M.E. 331, 332, 333)</td>
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<tr>
<td>Engineering Analysis (E. 301)</td>
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<tr>
<td>Tool Engineering (M.E. 341)</td>
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### SENIOR YEAR

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<th>Course</th>
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<tbody>
<tr>
<td>Machine Design (M.E. 411, 412, 413)</td>
<td>4</td>
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<tr>
<td>Internal Combustion Engines and Mechanical</td>
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<tr>
<td>Vibration (M.E. 421, 422)</td>
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<tr>
<td>M.E. Laboratory IV, V, VI (M.E. 431, 432, 433)</td>
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<tr>
<td>Heat Power and Turbomachines (M.E. 441, 442)</td>
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<td>4</td>
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<tr>
<td>Electrical Engineering I, II, III (E.E. 301, 302, 303)</td>
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<tr>
<td>M.E. Option — Automotive Engineering, Air Conditioning, Modern Physics (M.E. 423, 443, Physics 303)</td>
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<tr>
<td>Social Science or Humanities*</td>
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* Social Science, Humanities, or Elective should be taken at the 100 or 200 course level for the first year; 200 for the second year; 200, 300, or 400 for the third and fourth years. No more than 9 hours can be taken from any one department as an elective.
DESCRIPTION OF COURSES

GENERAL ENGINEERING

101. Orientation of Engineering Students. (1+0) 1 hour

102. Orientation of Engineering Students. (1+0) 1 hour

103. Orientation of Engineering Students. (1+0) 1 hour
   Schedules, irregularities in schedules, graduation requirements, class
   preparations, problem solutions, taking of tests, slide rule, background
   of various branches of engineering, technical and professional organiza-
   tions, and professionalism are covered. The purpose of this course is to
   help the student to make the transition from high school to college as
   well as the proper orientation in the profession.

111. Drawing I. (1+6) 3 hours
   Use of instruments, applied geometry, lettering, orthographic pro-
   jection, and pictorial drawing.

112. Drawing II. (1+6) 3 hours
   Continuation of Engineering 111. Developments, intersections, and
   working drawings. Projects in the main fields of engineering are used.
   Prerequisite: E. 111.

113. Descriptive Geometry. (1+6) 3 hours
   Descriptive geometry, advanced orthographic projections, problems
   of point, line, plane, and curved surfaces.
   Prerequisite: E. 111.

201. Problems and Orientation I. (1+0) 1 hour
   Continuation of Orientation of Engineering Students supplemented
   with lectures by practicing Professional Engineers.

202. Problems and Orientation II. (1+0) 1 hour
   Continuation of Engineering 201 supplemented with staff lectures
   on the various branches of the engineering profession.

211. Pattern Making and Foundry. (0+3) 1 hour
   Basic foundry processes; making a pattern, making a mold, pouring
   a casting, cleaning, and finishing.

212. Sheet Metal and Welding. (0+3) 1 hour
   Sheet metal fabrication and welding as applied to welded fixtures,
   etc.
213. Machine Shop. (0+3) 1 hour
Machining operations and practice, a complete project involving drilling, shaping, turning, milling, and finishing.

300. Engineering Economy. (3+0) 3 hours
The importance of engineering economy is emphasized. Principles of cost comparison are illustrated by discussing particular cases. Planning economy studies, investigating the time element in economy, and techniques are covered.

301. Engineering Analysis. (3+0) 3 hours
The professional method of dealing with engineering problems; application of professional method; the understanding of principles fundamental to engineering; translation into mathematics; solution of some ordinary differential equations; checking and interpretation of the mathematics are covered.

Prerequisite: Physics 243 and Calculus 213.

403. Engineering Law. (3+0) 3 hours
Legal principles of vital interest to engineers. General nature of law and the working of the judicial system. Contracts, agencies, sales, negotiable instruments, workmen’s compensation, mechanics liens, property, patents, and expert testimony are included.

Civil Engineering

211. Surveying I. (3+6) (Surveying Camp) 5 hours

Prerequisite: Trigonometry 122.

213. Surveying II. (3+6) 5 hours
Land surveys, advanced topographic surveys with transit, stadia and plane table, control surveys. Use of co-ordinate systems. Triangulation and precise leveling; descriptions of aerial survey methods. Hydrographic surveying.

Prerequisite: C.E. 211.

301. Statics. (4+0) 4 hours
A course covering the principles of mechanics as applied to statics. The course includes definitions and general principles, systems of coplanar concurrent forces, coplanar parallel forces, coplanar non-concurrent forces, concurrent forces in space, three force members, parallel
forces in space, non-concurrent non-parallel forces in space, friction, centroids and centers of gravity, and moments of inertia of areas. (Formerly C.E. 311).

Prerequisite: Calculus 213 and Physics 241.

302. Mechanics of Materials I. (4+3) 5 hours
General principles of stresses, elastic limit, shear, riveted joints, torsion, beams, shear and moment diagrams for beams, stresses in beams, deflection in beams by Double Integral and Area-Moment methods. Column theory and column formulas used by engineers. Laboratory. (Formerly C.E. 312).

Prerequisite: Calculus 213 and C.E. 301.

303. Mechanics of Materials II. (5+0) 5 hours
Beams with more than two supports, shear in beams, special beams, bending combined with tension or compression, resilience in bending or shear, combined stresses, theory of elastic limit or failure, curved beams and hooks. (Formerly C.E. 313).

Prerequisite: C.E. 302.

313. Theory of Structures I. (3+0) 3 hours
An introductory course covering by analytical methods the determination of reactions, moments, shears, and stresses in simple trussed structures for fixed and moving loads. Introduction to influence lines. (Formerly C.E. 411).

Prerequisite: C.E. 303 or concurrent therewith.

321. Geology. (3+0) 3 hours

Prerequisite: General Chemistry.

322. Fluid Mechanics. (4+3) 5 hours
Mechanics of compressible and incompressible liquids, fluid statics, flow and measurement of fluids in pipes and open channels, and hydraulic machines. Laboratory.

Prerequisite: Physics 243, Calculus 213, and C.E. 301.

323. Highway Engineering. (3+0) 3 hours
Design, construction, and maintenance of earth roads, paved roads,
and streets. Administration and organization of highway systems. Introduction to Traffic Engineering.

**Prerequisite:** C.E. 213 and C.E. 321.

### 331. Plain Concrete. (1+3) 2 hours

### 333. Route Surveying. (3+6) 5 hours
Highway and railroad location, simple curves, compound and reverse curves, spiral curves, vertical curves, earthwork measurement, and computations.

**Prerequisite:** C.E. 213.

### 401. Theory of Structures II. (3+0) 3 hours
An extension of C.E. 313. Covering the theory of uniform moving loads and determining the stresses in highway bridges. Analytical methods of determining stresses due to fixed and moving loads in simple span railway bridge trusses, use of influence lines. (Formerly C.E. 412).

**Prerequisite:** C.E. 313.

### 402. Theory of Structures III. (3+0) 3 hours
Statically indeterminate structures. (Formerly C.E. 413).

**Prerequisite:** C.E. 401.

### 411. Structural Design I. (0+6) 2 hours
An introductory course covering by graphical methods the determination of reactions, moments, shears, and stresses in simple trussed structures. Design steel roof truss and make drawings of same. (Formerly C.E. 411a).

**Prerequisite:** C.E. 313.

### 412. Structural Design II. (0+6) 2 hours
A continuation or extension of C.E. 411 covering the determination of stresses due to fixed and moving loads on a plate girder railway bridge with design and drawings of the same. (Formerly C.E. 412a).

**Prerequisite:** C.E. 401 and 411.

### 413. Structural Design III. (0+6) 2 hours
A continuation of C.E. 412. Design multi-story building including wind effect. Framing plan and design of a school or other appropriate building. Willot-Mohr diagrams for truss deflection. (Formerly C.E. 413a).

**Prerequisite:** C.E. 402 and 412.

134
420. Theory of Structures IV. (3+0) 3 hours
A general course dealing with movable and long span bridges. Covering bascule, vertical-lift, swing bridges; also continuous, cantilever, and suspension bridges.
Prerequisite: C.E. 402.

421. Reinforced Concrete I. (3+0) 3 hours
Theory of concrete beams, girders, slabs, columns, and footings.
Prerequisite: C.E. 303.

422. Reinforced Concrete II. (2+0) 2 hours
Continuation of C.E. 421.
Prerequisite: C.E. 421.

422a. Reinforced Concrete Design I. (0+6) 2 hours
Design of Concrete Structures.
Prerequisite: C.E. 421.

423. Reinforced Concrete III. (2+0) 2 hours
Prerequisite: C.E. 422.

423a. Reinforced Concrete Design II. (0+3) 1 hour
Continuation of C.E. 422a with further designs in concrete.
Prerequisite: C.E. 422 and 422a.

431. Soil Mechanics. (3+3) 4 hours
An introduction to soil engineering, physical properties of soils as affecting engineering design and construction, soil sampling, mechanics of soil masses, stability, settlement, types of foundations, and laboratory soil tests. (Formerly C.E. 432).
Prerequisite: C.E. 303 and C.E. 321.

432. Sanitary Engineering. (4+0) 4 hours
General course on sewerage systems, disposal of sewage, requisites of a water supply, quality of water, studies of rainfall and runoff, water treatment, and inspection trip.
Prerequisite: C.E. 322.

433. Cost Estimating. (2+3) 3 hours
Specifications, economical construction methods, quantity take-offs,
a: Taught upon sufficient demand.
cost analysis, and cost estimating as applied to various engineering projects.

*Prerequisite:* C.E. 412, 422a for senior C.E. students. All others, permission of instructor.

450a PROJECTS. 1–5 hours  
Practical projects involving calculation, design, drafting, engineering judgment, and skill in construction or repair work. Reference work is used to a great extent.

a: Taught upon sufficient demand.

**ELECTRICAL ENGINEERING**

213. Electric and Magnetic Circuits. (5+3) 6 hours  
A study of the fundamental laws of electricity and magnetism and their application to electric and magnetic circuits. Topics studied include: resistance, Ohm’s and Kirchhoff’s laws, batteries, electrical instruments and measurements, magnetic fields, electromagnetic forces, magnetic circuits, inductance, electric fields, and capacitance. Lectures, recitations, computing, and laboratory periods. *(Formerly E.E. 203).*

*Prerequisite:* Physics 242.

301. Electrical Engineering I. (2+3) 3 hours  
For students not majoring in Electrical Engineering. The study of the principles of electric and magnetic circuits and the principles of operation of direct-current machinery. Lectures, recitations, computing, and laboratory demonstration periods. *(Formerly E.E. 213).*

*Prerequisite:* Physics 242.

302. Electrical Engineering II. (2+3) 3 hours  
For students not majoring in Electrical Engineering. This course comprises a study of the principles of single and polyphase circuits and the principles of alternating-current machinery. Lectures, recitations, computing, and laboratory demonstration periods. *(Formerly E.E. 301).*

*Prerequisite:* E.E. 301.

303. Electrical Engineering III. (2+3) 3 hours  
For students not majoring in Electrical Engineering. A study of electronic and control devices. Lectures, recitations, computing, and laboratory demonstration periods.

*Prerequisite:* E.E. 302.

311. Alternating Current Circuits I. (4+3) 5 hours  
A fundamental course in alternating current theory. Phasor representation, the calculation of impedance in series and parallel circuits,
and network theorems are studied. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 213.

312. Alternating Current Circuits II. (4+3) 5 hours
A continuation of Alternating Current Circuits I. Balanced and unbalanced polyphase circuits, power measurements by n-l wattmeters, synthesis of non-sinusoidal waves, and symmetrical components. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 311.

313. Communication Circuits I. (4+0) 4 hours
Theory and operation of transmission lines and circuits at communication frequencies. Topics covered include standing waves, traveling waves, resonance, infinite lines, reflections, transmission line charts, open-circuited, and short-circuited stubs. Lectures and recitations. (Formerly E.E. 441).

Prerequisite: E.E. 312.

323. Electronics I. (4+3) 5 hours
This is a course in the theory of electron flow in vacuum tubes. Electron ballistics, the diode, the triode, the pentode, small-signal amplifier circuits, and feedback are studied. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 312.

411. Communication Circuits II. (3+3) 4 hours
A continuation of Communication Circuits I. The following topics are studied: measurements and impedance matching at radio frequencies, special consideration for power lines, and theory and design of filters. Lectures, recitations, computing, and laboratory periods. (Formerly E.E. 442).

Prerequisite: E.E. 313.

412. Electric and Magnetic Waves. (5+0) 5 hours
General vector fields, Maxwell’s equations, wave guides, and radiating systems are treated. Lectures and recitations.

Prerequisite: E.E. 411.

421. Electronics II. (3+0) 3 hours
A continuation of Electronics I. The topics studied include audio-frequency and radio-frequency large signal amplifiers, oscillators, modulation systems, and demodulation. Lectures and recitations. (Formerly E.E. 452).

Prerequisite: E.E. 323.
422. **Electronics III. (3+3)**

A continuation of Electronics II. The topics studied include gaseous conduction, gas diodes, gas control tubes and circuits, and wave-shaping circuits. Lectures, recitations, computing, and laboratory periods. *(Formerly E.E. 411).*

**Prerequisite:** E.E. 421.

423. **Electronics IV. (3+3)**

A continuation of Electronics III. The topics studied include solid-state electronic theory, transistors as circuit elements, and magnetic amplifiers. Lectures, recitation, computing, and laboratory periods.

**Prerequisite:** E.E. 422.

431. **Electrical Machinery I. (3+3)**

This is a course in the theory, application, operating characteristics, and control of direct-current machinery. Lectures, recitations, computing, and laboratory periods. *(Formerly E.E. 322).*

**Prerequisite:** E.E. 213.

432. **Electrical Machinery II. (3+3)**

A comprehensive study of the theory and performance of the alternator, the induction motor, and the transformer. Lectures, recitations, computing, and laboratory periods. *(Formerly E.E. 313).*

**Prerequisite:** E.E. 312.

433. **Electrical Machinery III. (4+3)**

A continuation of Electrical Machinery II comprising a study of induction motors of special types, induction regulator and related control apparatus, the synchronous motor, and the synchronous converter, all in theory, construction, and performance. Lecture, recitations, computing, and laboratory periods. *(Formerly E.E. 421).*

**Prerequisite:** E.E. 432.

441. **Transient Circuits. (4+0)**

A study of transients in linear systems. Introduction of the Laplace Transform method of solution. Lectures and recitations. *(Formerly E.E. 431).*

**Prerequisite:** E.E. 312 and E. 301.

442. **Automatic Control I. (3+0)**

This is a course in closed-loop systems performance from equations and transfer-function plots. Lectures and recitations. *(Formerly E.E. 472).*

**Prerequisite:** E.E. 441.
College of Engineering

443. AUTOMATIC CONTROL II. (2+3)  3 hours
   A continuation of Automatic Control I. Topics studied include:
   gain adjustment, series compensation, parallel compensation, and log-
   arithmic method of analysis. Lectures, recitations, computing, and lab-
   oratory periods.
   Prerequisite: E.E. 442.

450b PROJECTS.  1–5 hours
   Practical projects involving calculation, engineering judgment and
   skill in construction or repair work. These projects may vary from
   armature winding and motor repairing to the design and construction
   of laboratory apparatus. Individual assignments are used for each stu-
   dent.

462b and 463b ADVANCED ELECTRICAL LABORATORY I & II.  3 hours
   Senior year. Special laboratory problems and investigations are in-
   tricate and more advanced than those included in regular courses.
   Minor research projects may be undertaken. Hours to be arranged to
   suit balance of schedule.
   b: Taught upon sufficient demand.

MECHANICAL ENGINEERING

203. MANUFACTURING PROCESSES. (3+0)  3 hours
   The manufacturing synthesis, equipment, methods, materials;
   foundry, welding, and fabricating processes; machine tools, gear mak-
   ing, abrasive processes, gaging, and inspection.

213. METALLURGY. (3+0)  3 hours
   Introduction to structure and properties of metals and alloys. Effects
   of diffusion, corrosion, heat treatment, et cetera.

301. THERMODYNAMICS. (3+3)  4 hours
   For non-mechanicals. Fundamentals and basic application of thermo-
   dynamics.
   Prerequisite: Chemistry 113, Calculus 213, and Physics 243.

303. HEAT TRANSFER. (2+3)  3 hours
   For non-mechanicals. Introduction to heat transfer with special prob-
   lems on coils, cores, and electric machines.
   Prerequisite: M.E. 301.
311. THERMODYNAMICS. (4+3) 5 hours
Fundamentals of thermodynamics applied to internal combustion engines, turbines, refrigeration, et cetera.
Prerequisite: Chemistry 113, Math 213, and Physics 243.

312. FLUID MECHANICS. (3+6) 5 hours
Principles of incompressible and compressible fluid flow, measurement, and forces with introduction to basic hydrodynamics and aerodynamics.
Prerequisite: M.E. 311.

313. HEAT TRANSFER. (3+3) 4 hours
Introduction to heat transfer by conduction, convection, and radiation with numerical methods of computation.
Prerequisite: M.E. 312.

322. DYNAMICS. (5+0) 5 hours
Friction, rectilinear and rotary motion, kinetics of bodies under uniform and variable rectilinear acceleration, uniform and non-uniform rotation of bodies, work, power, momentum, impulse, impact.
Prerequisite: C.E. 301.

323. MECHANISM. (3+3) 4 hours
Motion, velocity, acceleration, and jerk; kinematic chains; instantaneous centers, parallel and straight line motion, cams, gears and gear trains, belting, and intermittent motions.
Prerequisite: M.E. 322.

331. MECHANICAL LABORATORY I. (0+3) 1 hour
Calibration and uses of indicating and recording instruments, gages.
Prerequisite: Physics 243.

332. MECHANICAL LABORATORY II. (0+3) 1 hour
Valve setting and timing of steam, gasoline and diesel engines. Flue gas analysis. Brakes and Dynamometers.

333. MECHANICAL LABORATORY III. (0+3) 1 hour
Fuels and lubricants, materials, pump and steam engine.

341. TOOL ENGINEERING. (2+3) 3 hours
Principles of economics, estimating, and dimensioning; operations and process sequence; tools, jigs, fixtures, dies.
Prerequisite: M.E. 203.
College of Engineering

411. MACHINE DESIGN I. (3+3) 4 hours
Problems involving the proportioning of machine components such as fasteners, pressure vessels, shafts, belting, chain, gears, et cetera, considering stress and fatigue.
Prerequisite: M.E. 323 and M.E. 341.

412. MACHINE DESIGN II. (3+3) 4 hours
A continuation of M.E. 411 with the addition of a personal project for each student probably involving board work.
Prerequisite: M.E. 411.

413. MACHINE DESIGN III. (3+6) 5 hours
Complete design and layout of a machine.
Prerequisite: M.E. 412.

421. INTERNAL COMBUSTION ENGINES. (4+0) 4 hours
Liberation of heat energy, combustion; Dual, Otto and Diesel cycles; gas, gasoline, oil engines, engine output and economy, heat losses, carburetion, ignition, injection, and performance.
Prerequisite: M.E. 313.

422. MECHANICAL VIBRATION. (3+3) 3 hours
Fundamentals of free, damped and forced vibration of single degree of freedom systems. Multidegree of freedom systems and introduction to vibration of elastic bodies and analogs. (Formerly M.E. 423).
Prerequisite: M.E. 322.

423c AUTOMOTIVE ENGINEERING. (3+0) 3 hours
Optional. A study of vehicles of transportation using internal combustion engines, power and brake requirements, loading, balance, et cetera. (Formerly M.E. 422).
Prerequisite: M.E. 421.

431. MECHANICAL LABORATORY IV. (0+3) 1 hour

432. MECHANICAL LABORATORY V. (0+3) 1 hour

433. MECHANICAL LABORATORY VI. (0+6) 2 hours
Laboratory periods of 3 hours each applied to tests of blowers, pumps, engines (steam, gasoline, diesel), steam turbines, heating and refrigeration units, steam power plants, air compressor, and related equipment.

C: Taught upon sufficient demand.
441. Heat Power. (2+3) 3 hours
Survey of power plants, power plant equipment, and economics of operation. Introduction to application of solar and nuclear energy.
Prerequisite: M.E. 313.

442. Turbomachines. (3+3) 4 hours
Application of similarity relations and dimensional analysis to turbomachines: fans, pumps, compressors, turbines and torque converters.
Prerequisite: M.E. 313.

443c Air Conditioning. (2+3) 3 hours
Optional. Students interested in heating, ventilating, and refrigeration principles may elect. Design problems included.
Prerequisite: M.E. 313.

450c Projects. 1–5 hours
Practical studies or investigations involving the application of original thought, the determination of new information, or new applications of known information or equipment.

c: Taught upon sufficient demand.
College of Pharmacy

ALBERT C. SMITH, Dean

AIMS AND OBJECTIVES

In addition to the general objectives set forth by the University, the College of Pharmacy proposes the following among its aims and purposes:

To prepare its students so that they will be able to meet satisfactorily the professional and cultural demands expected of pharmacists, and to carry their share of the responsibility of public health, welfare, and education in their respective communities.

Moreover, the students of the college are entreated to develop self-reliance, character, and ethics to the end that they will, with confidence and satisfaction, render safe and efficient pharmaceutical service to all who seek it.

Furthermore, they are made acquainted with the need for and value of membership in the local, state, and national pharmaceutical associations and in civic, social and religious bodies of the communities in which they live. As students, they are urged also to affiliate with the student branch of the American Pharmaceutical Association and other groups that promote worthwhile activities on the campus.

To accomplish these scholastic, professional, and social goals, students are advised concerning their plans of study and are encouraged to maintain high standards of scholarship. Participation in a reasonable number of campus activities, not deterrent to good academic record, is greatly encouraged. It is believed this gives breadth to the student's college experience and better prepares him for life after college.

REQUIREMENTS FOR ADMISSION TO PRE-PHARMACY

1. The applicant entering pre-pharmacy should be at least seventeen years of age and of good moral character.

2. The present minimum educational requirement for the Certificate of Preliminary Education is graduation from a legally constituted first grade high school, or its equivalent. Credentials which are, in the judgment of the Examiner, the full equivalent will be accepted as meeting this requirement. Other accepted credentials
will be checked by units. When so checked, the minimum requirement is sixteen academic units in the following:

3. English (three units); Latin, German, French, Spanish, industrial arts, home economics (each two units), algebra, plane and solid geometry (each one and one-half units); general science, physics, chemistry, general history, biology, botany, zoology, bookkeeping, agriculture (each one unit); physical geography, physiology, English history, American history, civics, commercial geography, business correspondence, physical education, music (each one-half unit).

4. See note 1, under requirements for admission to the Pharmacy College concerning the Certificate of Preliminary Education.

5. Applicants applying for admission into pre-pharmacy, who do not already have apprenticeship or internship papers, should ask for the necessary blanks for registration as an apprentice or interne. These blanks may be obtained from the Director of Admissions, the Dean of the College of Pharmacy, and the Secretary of the Ohio Board of Pharmacy. The apprentice or interne papers should be secured as soon as one starts employment in a drug store, as only the registered pharmacist under whom the applicant works can fill the blanks necessary to become a registered apprentice or interne. Apprenticeship or internship time can only be obtained during the vacation periods, that is, Christmas vacations and summer months or when not enrolled in a College of Pharmacy. (Note the apprenticeship or internship requirements to become a registered pharmacist.)

REQUIREMENTS FOR ADMISSION TO THE
COLLEGE OF PHARMACY

1. Certificate of Preliminary Education. The applicant should send to the State Board of Pharmacy at the earliest possible date—
   (a) The Census Blank properly filled out.
   (b) A post-office money order for three dollars, made payable to the State Board of Pharmacy.

   The Examiner will secure all credentials desired after the Census Blank has been received. Ample time should be allowed for securing credentials and investigating schools. If the preliminary education is satisfactory, a certificate will be mailed to the applicant; if unsatisfactory, the applicant will be so notified.
2. The applicant must have one year of pre-pharmacy from a recognized institution of higher learning. Prior recognition will be given those individuals receiving their pre-pharmacy training at Ohio Northern University. The applicant must have completed at least forty-five quarter hours (thirty semester hours), exclusive of Physical Education, of which not less than thirty quarter (twenty semester hours) are of the required courses prescribed in the pre-pharmacy curriculum and the remainder in acceptable electives or required courses prescribed in the regular Pharmacy curriculum. The applicant must also maintain a scholarship rating of 2 (C average) and be in good standing to become a candidate for the Sophomore Class. Students failing to maintain this rating may continue in pre-pharmacy (subject to the academic rules and regulations of the College of Liberal Arts) until he has met the above requirements.

3. Advanced Standing. A student desiring to transfer from another college must present a transcript of his record and a certificate of honorable dismissal from the college he is leaving. He should submit a catalogue of his college. Full credit will be given for work satisfactorily completed in recognized institutions of higher learning, provided such work is parallel to the requirements for graduation in this institution, but credit will not be allowed for a course in which the lowest passing grade was received.

Advanced credit is given for not more than 135 quarter hours (ninety semester hours) exclusive of physical education.

Persons who meet the requirements for admission as indicated in the preceding paragraphs are issued a Permit to Enter the College of Pharmacy. To enter any of the regular courses of study the candidate, after being granted a Permit to Enter, must prepare a schedule of studies with the aid of an adviser and approval of the Dean, and pay tuition and fees as stated elsewhere in this catalog.

Students who are entitled to advanced standing may enter at the time approved by the Dean. Write for further information.

4. Classification of Students. The minimum requirements for sophomore standing are forty-five credit hours and a point average of 2; for junior standing, 100 credit hours and a point average of not less than 2.0; for senior standing, 150 credit hours and a point average of not less than 2.0. See scholarship and probation rating below.
5. SCHOLARSHIP RATING AND PROBATION. To remain in good standing a student must maintain a 2.0 (C) average. If the accumulative point average of the student falls below 2.0, he is then placed on warning and allowed to carry a full schedule. If the student fails to bring his accumulative average up to 2.0, the student will be placed on probation. After one quarter on probation, the student who fails to improve his standing will be dismissed from the College of Pharmacy for one year. Upon resumption of his studies he will be placed on probation for two terms. If at the end of two terms the point average has not been raised to 2.0, the student will be dismissed from the College of Pharmacy.

To calculate the accumulative point average a three credit hour course with a grade of A gives twelve quality points. A five credit hour course with a grade of B, gives fifteen quality points, etc.

REQUIREMENTS FOR GRADUATION

Each person upon whom a degree is conferred must be of good moral character and have satisfactorily completed all the prescribed work. He must spend at least four full years or twelve terms in college of which not less than three full years or nine quarters must be in a recognized College of Pharmacy and one full year or three quarters in pre-pharmacy, and must be in residence the last year in Ohio Northern University, College of Pharmacy. Two hundred and six hours, including six quarters of physical education, are required as well as the same number of quality points as scheduled hours. The candidate must be present at the Commencement Exercises unless officially excused.

REQUIREMENTS FOR OHIO EXAMINATIONS FOR REGISTERED PHARMACIST

To be eligible for admission to the Ohio Examination for Registered Pharmacist, the candidate must be a graduate of a recognized College of Pharmacy, and must have at least one year of drug store experience under the direction of a registered pharmacist after becoming registered with the State Board of Pharmacy as an apprentice or intern. He must be a citizen of the United States of America or possess his first papers toward citizenship, and be at least twenty-one years of age. Citizenship is not prerequisite to admission to a College of Pharmacy.
College of Pharmacy

The address of the State Board of Pharmacy is as follows:

State Board of Pharmacy
Room 1010 Wyandotte Building
21 West Broad Street
Columbus, Ohio

LIBRARY

The facilities of the main library are at the disposal of the pharmacy students. In this building will be found many of the current books and classics along with books, periodicals and journals in physics, biology and related sciences. All books pertaining to Pharmacy, Medicine and related sciences are in the main library as well as bound periodicals on pharmacy and related sciences. Current issues of journals in pharmacy and related sciences are found in the pharmacy reading room.

THE CURRICULUM

Many courses are required to obtain satisfactory background in any field of endeavor and pharmacy is no exception. The curriculum thus is made flexible enough to allow preparation in specialized activities in the profession. All subjects are listed in a logical sequence so that the student will be better prepared for each ensuing course.

Not less than 206 credit hours are required for graduation, excluding physical education.

RECOMMENDED FIRST YEAR COURSE

IN PRE-PHARMACY*

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<thead>
<tr>
<th>FIRST TERM</th>
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<td>Chemistry 112</td>
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<td>Chemistry 113</td>
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* The pre-pharmacy curriculum is offered in the College of Liberal Arts.
** Students in pre-pharmacy are required to take an entrance examination in Arithmetic. Those failing to make a grade of 75 or better will be contacted by the Dean of the College of Pharmacy for further instructions.
# THE PHARMACY CURRICULUM

## SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Term</th>
<th>Course</th>
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<td>Pharmacognosy 211</td>
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<td>Accounting 131</td>
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<td>Physics 221</td>
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<td>Chemistry 212</td>
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<td>Physics 222</td>
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## JUNIOR YEAR

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<tr>
<td></td>
<td>Physiology 331</td>
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<tr>
<td></td>
<td>Bacteriology 321</td>
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<td></td>
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<td>Second Term</td>
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<tr>
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<td>Third Term</td>
<td>Physiology 332</td>
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<td>Pharmacy Administration 310</td>
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<td>Pharmacy 320</td>
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<td></td>
<td>Pharmaceutical Chemistry 323</td>
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<td>Bacteriology 323</td>
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## SENIOR YEAR

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<td>First Term</td>
<td>Pharmacy 401</td>
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<tr>
<td></td>
<td>Pharmacology 421</td>
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<tr>
<td></td>
<td>Pharmaceutical Chemistry 431</td>
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<td></td>
<td>Pharmacy Administration 410</td>
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<td>Second Term</td>
<td>Pharmacy 402</td>
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<td>Third Term</td>
<td>Pharmaceutical Chemistry 432</td>
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<td>Pharmacy Administration 420</td>
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<td></td>
<td>Elective*</td>
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<tr>
<td></td>
<td>Pharmacy 403</td>
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<td>Pharmacology 423</td>
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<tr>
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<td>Pharmaceutical Chemistry 433</td>
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<td>Pharmacy 440</td>
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<tr>
<td></td>
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* Students planning on entering graduate school should elect a modern language; if they plan on majoring in chemistry, they will need more mathematics. Electives: Any course in the liberal arts program may be selected upon approval of the Advisor, Department Head and the Dean of the College of Pharmacy. Additional electives may be selected from the following:

**Advanced Electives**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Advanced First Aid 115</td>
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<td>Pharmacognosy 411</td>
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<td>Pharmacognosy 412</td>
<td>2 or 3</td>
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<tr>
<td>Pharmacognosy 413</td>
<td>2 or 3</td>
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<tr>
<td>Pharmacology 432</td>
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</table>

All 450 courses are “Problem Courses” and are given in Bacteriology and four divisions of the Pharmacy College. These courses are open to seniors only and a total of 3 hours credit may be taken each term. All courses ending in “0” are generally taught each quarter, provided a sufficient number of students require the course.
DESCRIPTION OF COURSES

For detailed description of the basic pre-professional courses such as freshman English, biology, chemistry, mathematics, et cetera, see these Departments as listed elsewhere in this catalogue.

BACTERIOLOGY

122. Introductory Microbiology. 3 + 3
   A general course in bacteriology for students in the nursing program.
   Dr. Lepovetsky
   4 hours

321. General Bacteriology. 3 + 3
   A general course in the fundamentals of bacteriology. The history of bacteriology, method of classification, characteristics of bacteria and related groups are studied. Attention is given to physical and chemical means of control, and to the culturing and growth of micro-organisms.
   Prerequisites: Biology and Organic Chemistry.
   Dr. Lepovetsky
   4 hours

323. Pathogenic Bacteriology. 3 + 3
   The basic principles of immunity and pathogenicity are considered. Various infections of man and domestic animals are discussed as well as methods of preventing and treating these infections.
   Prerequisites: Bacteriology 321.
   Dr. Lepovetsky
   4 hours

420. Virology. 2 + 0
   A more extensive consideration of viruses and viral infections than is undertaken in Bacteriology 323.
   Prerequisites: Bacteriology 321 and 323.
   Dr. Lepovetsky
   2 hours

450. Bacteriology Problems
   (el) 1 to 3 hours
   A minor investigation course designed to familiarize qualified juniors and seniors with research methods. The student will review the literature pertaining to his problem and perform laboratory experiments designed to solve the problems, and write a report summarizing his work.
   Prerequisites: An adequate training in bacteriology and organic chemistry.
   Dr. Lepovetsky

BIOLOGY

All students who are candidates for graduation from the College of
Pharmacy are required to complete at least one year of biology or its equivalent.

A description of these courses is listed elsewhere in this catalog.

CHEMISTRY

All students who are candidates for graduation from the College of Pharmacy will be required to complete Chemistry 111, 112, 123, 211, 212 and 213 or the equivalents. Additional courses in chemistry may be elected upon approval of the Dean.

A description of the courses taught in the Chemistry Department is listed elsewhere in this catalog.

ENGLISH

The pharmacist must use both oral and written English. In order to communicate clearly and adequately with the wholesaler, manufacturer, medical practitioner, layman, state boards, the government, and to prepare papers for clubs, articles for magazines and local newspapers, or advertising, the ability to speak and write English is essential.

English C-1, C-2, and C-3 or their equivalent are required of all pharmacy students. Public Speaking, English Grammar and Business Communications may be elected. A description of these courses will be found elsewhere in this catalog.

HEALTH AND PHYSICAL EDUCATION

Some form of physical activity is required of all students during the first two years of residence in the University. The nature of the work will depend upon the needs of the individual as revealed by a careful examination.

The pharmacist should learn the fundamentals of personal and general hygiene that he may be able to maintain a high degree of efficiency during and after college life and to assist in the promotion of public health as outlined by the United States Public Health Service.

Courses 110, 121, and 212 in Health and Physical Education may be used as electives on approval of the Dean. A complete description of these courses will be found under courses of Health in another part of this catalog.
Mathematics is of the utmost importance to a pharmacist; inaccuracies in computations have led to serious results. All pharmacy students are required to take Mathematics 111, 112, and 113 or their equivalents and a specially designed course in Pharmacy Arithmetic described as Pharmacy 220.

Students desiring to pursue a major in chemistry should take additional courses in mathematics, subject to approval by the Dean. A description of the required courses and other suitable electives in this field will be found elsewhere in this catalog.

MODERN FOREIGN LANGUAGES

Many texts and periodicals on pharmacy and the allied sciences are published in a foreign language. In order to meet the demand of students who desire a knowledge of a foreign language for reading, conversational, or business purposes, appropriate courses are offered. If a student expects to do graduate work, he should have a reading knowledge of at least two foreign languages, French and German.

PHARMACEUTICAL CHEMISTRY

321. PHARMACEUTICAL ANALYSIS. 3 + 3 4 hours

(Formerly Pharmaceutical Chemistry 201).

A course involving the theories and methods utilized in gravimetric assay procedures of inorganic chemicals of the U.S.P. and N.F., and some of the more common procedures using organic precipitants. The latter part of the quarter introduces volumetric theories.

Prerequisites: Chemistry 111, 112, 113.

322. PHARMACEUTICAL ANALYSIS. 3 + 3 4 hours

A continuation of the theories and methods involved in volumetric procedures. The latter part of the quarter is devoted to physical methods employed in determining the purity of substances by refractometric, alcoholographic, colorimetric and polarimetric means. Laboratory exercises are used to emphasize these determinations.

Prerequisites: Chemistry 111, 112, 113.

323. PHARMACEUTICAL ANALYSIS. 3 + 3 4 hours

A continuation of both physical and chemical constants carried out on organic material of the U.S.P. and N.F. A study of the proximate
assays of official drugs and preparations being emphasized. Laboratory procedures to correlate the above discussions are made.

Prerequisites: Chemistry 211, 212, and Pharmaceutical Chemistry 321 and 322.

431. Inorganic Chemicals. 4 + 0 4 hours
A study of the preparation, reactions, solubility, test for purity and identity of the inorganic chemicals of the U.S.P. and N.F. A brief discussion of the more important non-official chemicals is made, incompatibilities, action and uses given.

Prerequisites: Chemistry 113, Pharmaceutical Chemistry 321 and 322. Dr. Smith

432. Inorganic and Organic Chemicals. 4 + 0 4 hours
The inorganic chemical study is completed, then the study of the U.S.P. and N.F. alkaloids and alkaloidal salts is made. Trade names are listed for any preparation or substance found in this group.

Prerequisites: Chemistry 113, 213, and Pharmaceutical Chemistry 322. Dr. Smith

433. Organic Chemicals. 4 + 0 5 hours
A study of the non-alkaloidal organic chemicals, vitamins, hormones, antibiotics, fixed and volatile oils is made as to synthesis, preparations, reactions, solubility, identity, action and dose. Trade names are listed and studied. Dr. Smith

450. Chemistry Problems (el) 1 to 3 hours
The title and character of the course is dependent upon the problem. This course is designed to stimulate introductory research work. Open to seniors only. Dr. Smith

410. Chromatographic Analysis (el) 2 hours
A study of the various types of Chromatographic Analysis. Dr. Lepovetsky or Dr. Goorley

PHARMACOGNOSY

211. General Pharmacognosy 1. 3 + 3 4 hours
The content of the course is based upon biochemical classification. It includes the study of nomenclature, descriptions, sources, production, preservation, constituents, and therapeutic properties of the official and of some important non-official vegetable and animal drugs and
their derivatives. The course includes a study of the basic plant cells
and tissues and non-protoplastic cell inclusions. In the laboratory
microscopical studies are supplemented with histological examinations
and microscopical examinations of important powdered drugs as well
as with chemical tests.

Prerequisites: Biology 111, 112, 113 and Chemistry 111, 112, and 123.
Dr. Koffler

212. General Pharmacognosy 2. 3 + 3
A continuation of General Pharmacognosy 211.
Dr. Koffler

213. General Pharmacognosy 3. 3 + 3
A continuation of General Pharmacognosy 211 and 212. In addition,
the fundamentals of antibiotics, herbicides, insecticides and rodentici
des are studied.
Dr. Koffler

411. Review of Current Pharmacognosy Literature. 2 + 0
(el) 2 hours
A review of recent literature, books, and articles in the field of Phar
cacognosy.
Dr. Koffler

412. Economic Biology. 2 + 0 or (2 + 3)
(el) 2 or 3 hours
Commercial sources of crude drugs and vegetable products especially
gums, waxes, vegetable dyes, spices and cereals. The problems of stor-
age, infestation, etc. are studied. Two lectures a week. Laboratory work
may be elected giving an additional credit.
Dr. Koffler

413. Allergenic Plants, Allergy and Allergens. 2 + 0 or 2 + 3
(el) 2 or 3 hours
A study of pollens, pollen-bearing plants, food allergies and allergenic
molds. Field identification, pollen and mold spore counts as well
as types of allergies studied.

420. Insecticides, Fungicides and Herbicides. 2 + 0
(el) 2 hours
A study of the composition, uses and standards of important syn-
thetic and natural products used as insecticides, fungicides and weed-
kills.

450. Pharmacognosy Problems
(el) 1 to 3 hours
A special problems course. Small research projects in Pharmacog-
nosy are carried out.

Dr. Koffler
College of Pharmacy

PHARMACOLOGY

421. Pharmacology 1. 4 + 0  
Introduction, history, vocabulary and terminology used in pharmacology is discussed. The local anti-infectives, sulfonamides, antibiotics, antimalarials, arsenicals and bismuth compounds are considered. Amebicides, anthelmintics, cathartics and antacids are also considered. 
Prerequisites: Physiology 233 and 331; Chemistry 111, 112, 303; Pharmacognosy 213 and Bacteriology 323. Dr. Goorley

422. Pharmacology 2. 4 + 3  
A study of the autonomic drugs and blocking agents, antihistamines, and antispasmodics introduces the functional division of pharmacology. The remainder of the quarter is devoted to general anesthetics, local anesthetics, hypnotics, anti-epileptics, antipyretic analgesics, narcotic and addicting analgesics, central nervous system stimulants and their antidotes. Experiments shall be related to the lectures of the first two quarters. 
Prerequisite: Pharmacology 421. Dr. Goorley

423. Pharmacology 3. 4 + 3  
A study of the drugs acting on the cardiovascular system, diuretics, I.V. fluids, hematins, hormones, vitamins, diagnostic aids, and bacteriologicals. Correlation review with special emphasis on toxicology. Laboratory work shall be mainly on the cardiovascular system. Small groups may work on special experiments of their own choosing. 
Prerequisite: Pharmacology 402. Dr. Goorley

431. Pharmacology (Biologicals). 2 + 0  (el) 2 hours  
The Pharmacology of the Hormones, Vitamins and other Biological Products.

432. Pharmacology (Chemotherapy). 2 + 0  (el) 2 hours  
The relationships between Structure and Biological activity of natural and synthetic drug products. A brief consideration of the chemical agents used in the treatment of infectious diseases. Must be preceded by Pcol. 421.

433. Pharmacology (Toxicology). 2 + 0  (el) 2 hours  
The general Principles of Toxicology. The toxic effects, symptoms and antitodal treatment of the currently used Therapeutic agents.
450. Pharmacology

A special problems course to stimulate interest in research in this field. Open to Seniors only.

Prerequisite: Pharmacology 402.

440. Bio-Assays Lecture and Laboratory Arranged

Attention is given to biological assay methods and standardization of the U.S.P. and N.F. drugs that are satisfactorily evaluated by this method.

Prerequisites: Physiology, Pharmacology 422, and Pharmaceutical Chemistry 323. Open to Seniors only.

PHARMACY

210. Introduction to Pharmacy. 3 + 3

This is a beginning professional course which is designed to acquaint the student with the theories, techniques, and terminology essential to an understanding of the science and art of Pharmacy.

Dr. Lee

220. Pharmacy Arithmetic. 3 + 0

A course in calculations pertaining to pharmacy. The student is taught current weights and measures, applications of proportions, alligation, specific gravity, specific volume, thermometer scales, percentage solution, commercial discounts and elementary chemical problems common to pharmacy.

301. Pharmaceutical Preparations 1. 3 + 3

A study of the aqueous, hydro-alcoholic, alcoholic and suspension products of the U.S.P. and N.F. will be made.

Dr. Lee

302. Pharmaceutical Preparations 2. 3 + 3

A continuation of Pharmacy 301 and includes the making of a variety of solid and semi-solid preparations including ointments, powders and suppositories.

Dr. Lee

320. History of Pharmacy. 3 + 0

A survey of the ancient, medieval and modern practices and ideals of the profession of Pharmacy. This course is mainly cultural. Lectures, discussions and library assignments.

Dr. Lee

330. Cosmetics. 2 + 3

A study of the composition, formulation and preparation of cosmetics. The different types of cosmetic products and packaging are discussed. Study is also made of the basic ingredients used in perfumes. Open to juniors and seniors.

Dr. Goorley
401. Prescription Practice 1. 3 + 3  
A study of the prescription, prescription Latin and incompatibilities in prescriptions.  
Prerequisites: Pharmacy 302 and Chemistry 213.  Mr. Jongeward

402. Prescription Practice 2. 2 + 6  
A continuation of Pharmacy 401 with special emphasis put on powders, pills, capsules, etc. Simple, compound and adjusted solutions, and special uses of solutions and dermatological preparations.  
Mr. Jongeward

403. Prescription Practice 3. 2 + 3  
A study of the methods of disinfection, sterilization and other specialized prescription practices.  
Mr. Jongeward

411. Animal Pharmacy. 2 + 0  
(el) 2 hours  
A study of the medicinal substances used in Veterinary Medicine and the relationship of the Pharmacist to the Veterinarian.  
Mr. Jongeward

412. Formulations. 2 + 0  
(el) 2 hours  
A theoretical study of the manufacturing of Pharmaceuticals. (Building formulae for tablets, pills, external and internal Pharmaceuticals.)  
Mr. Jongeward

440. Advanced Survey. 3 + 0  
3 hours  
A technical survey of the latest U.S.P. and N.F. prerequisites. The correlation and use of general chemistry, qualitative and quantitative analysis, organic chemistry, pharmacognosy, pharmacology and pharmacy as used in the U.S.P. and N.F.  
Prerequisites: Senior standing.  
Dr. Smith

450. Pharmacy Problems  
(el) 1 to 3 hours  
Minor investigations for qualified students. A course designed to interest students in research in Pharmacy. Open to seniors only.  
Dr. Lee and Mr. Jongeward

PHARMACY ADMINISTRATION

131. Principles of Accounting. 3 + 0  
3 hours  
See Department of Economics, College of Liberal Arts for description.  
Mrs. Ritz
College of Pharmacy

310. PHARMACY LAWS. 3 + 0 3 hours
A study of the federal, state and local acts, and regulations governing the practice of Pharmacy and the sale of potent and habit forming drugs. Government bulletins and pamphlets are issued to students so that they will become acquainted with said laws.

410. BUSINESS MANAGEMENT. 3 + 0 3 hours
A course in drug store business methods. Attention is given to arrangement of fixtures and stock, sources of supplies, distribution to the physician, dentist, veterinarian, the public hospitals, and to other phases of business essential to successful drug store management.

420. DRUG MARKETING. 3 + 0 3 hours
A study of the marketing of drugs and drug products from the manufacturer's and wholesaler's standpoint rather than from the retailer's point of view. Other sources of marketing may be introduced to compare the overall picture of marketing.

PHYSICS

It is impossible to comprehend many of the changes which occur in the manufacture of pharmaceutical preparations without having a knowledge of the science of physics. All pharmacy students are required to take Physics 221 and 222 or their equivalents and may elect Physics 223. For a complete description of these courses see the descriptions under "Physics" in another section of this catalog.

PHYSIOLOGY

All students are required to complete at least two terms of Physiology. A description of these courses is listed under Biology elsewhere in this catalog.
College of Law — Courtroom

A Corner of the Law Library
College of Law

Stephen Rapson Curtis, Dean

AFFILIATIONS

The College of Law is fully approved by the American Bar Association.

The College also holds membership in the League of Ohio Law Schools, and is fully approved by the League.

PURPOSE

In keeping with the avowed purpose of Ohio Northern University it was the aim of our Law College founders, which continued through the ensuing years, to afford an opportunity for students, both men and women, to obtain a collegiate training in law. The courses are planned primarily to train students for the practice of law in any jurisdiction in which they may meet the requirements for admission. Such courses may also be pursued advantageously by anyone desiring to acquire a knowledge of the principles and history of law, either as a part of a liberal education, or as part of the foundation of a career in government or in business.

Courses are offered in all subjects included in the Ohio Bar Examination, and various electives may be pursued in the course of study.

Tuition rates are reasonable and by reason of the location of the school in a small community, the living costs are comparatively low.

Among the advantages offered by Ohio Northern’s Law College are small classes, opportunity for frequent class participation, individual contact with instructors both in and out of the classroom, and a small community environment conducive to good study habits.

In training students for the practice of law, the College of Law has four chief objectives:

1. To inculcate the principles of legal ethics and of the lawyer’s public responsibility, so that the student, as a lawyer, may be worthy to take his place as a trusted leader and counselor in his community.

2. To inculcate a systematic and complete grounding in the history and fundamental principles of the common law and statute law including the more important statutes and decided cases of Ohio.
College of Law

3. To develop proficiency in the application of the principles of law to the complicated relations, rights and duties arising in modern society through the training of the powers of analysis, discernment and judgment.

4. To show the place, importance, and aims of the law in society.

SCHOLARSHIPS AND STUDENT AID

Scholarships, grants-in-aid, loans and some prizes for worthy students are available to all law students. For a more detailed statement, refer to page [insert page number] of this catalogue.

BEGINNING LAW STUDENTS

Students who are commencing the study of law are admitted only at the beginning of the fall quarter.

The right is reserved to make such changes in the curriculum and the order in which courses are given as may be necessary.

ORIENTATION WEEK

All beginning law students attend a series of lectures during Orientation Week, which is the week preceding the first day of classes in the fall quarter. These lectures are designed to orient the student to the study of law before he is actually faced with the study of law. He will learn something of the nature of the studies through which he must go to accomplish this. There will be a study of the process of trying a case and appealing it, so that the student will be able to understand the places of the trial court and the appellate opinion in the judicial process. He should obtain materials for these introductory lectures at least two weeks prior to Orientation Week in order to familiarize himself with them. The lectures commence at two o'clock on Tuesday afternoon of Orientation Week. Details may be obtained from the dean's office.

LAW SCHOOL ORGANIZATIONS

All students, upon admission to the College of Law, become members of the Junior Bar Association, an organization which undertakes student activities of general interest and importance to the College of Law and its program. Quarterly dues are one dollar. The organization
College of Law

has full membership in the American Law Student Association, affiliated with the American Bar Association.

Delta Theta Phi and Sigma Delta Kappa, national law school fraternities, are represented by chapters in the College of Law.

Two other organizations, membership in which is highly prized by law students, are the Toastmasters Club and Les Avocats. Their purpose is to develop the skills necessary for effective public speaking.

NATIONAL MOOT COURT COMPETITION

The College of Law enters a team each year in the National Moot Court Competition.

SCHOOLS REPRESENTED

Ever increasing numbers of our law students have secured their pre-legal education at colleges and universities other than Ohio Northern University. Many of these are coming with the Bachelor’s degree or its equivalent. Among the colleges and universities contributing to the pre-legal education of our students in the past are the following: Amherst, Ashland College, Baldwin-Wallace, Bowling Green, Brown, Colgate, Defiance, Denison University, Depauw, Duquesne University, De Sales College, Fenn College, Geneva, Harvard, Heidelberg, Hillsdale, Hiram, John Carroll University, Kenyon, Kent State, Marshall College, Miami, Missouri, Mt. Union, Muskingum College, Northwestern, Ohio University, Ohio State University, Ohio Wesleyan University, Pittsburgh, Purdue, Rio Grande, Swarthmore, Toledo University, University of Cincinnati, University of Dayton, University of Kentucky, University of Michigan, Michigan State University, University of Southern California, University of Virginia, University of West Virginia, University of Wisconsin, Vincennes University, Virginia Military Institute, George Washington University, Washington and Lee University, Western Reserve University, Western State Teachers College, Wilmington College, Wittenberg College, Wooster, Youngstown College, and Yale University.

THE JAY P. TAGGART MEMORIAL LAW LIBRARY

The Law Library draws much of its support from a permanent endowment established in memory of the late Jay P. Taggart, one-time Dean of the College and long-time trustee of Ohio Northern.
The Law Library is up-to-date, modern, and well selected. It contains the reports of the courts of last resort of the States, the United States Supreme Court reports, the Federal reports, the Reporter System, a complete set of English reports, the more important series of special reports and selected cases, a collection of the latest editions of standard text books, leading legal periodicals, digests, the leading encyclopedias of law, and other works of reference. The Library is accessible each week day, the students being allowed free access to the books.

The material included in the Library complies with law library requirements of the American Bar Association.

METHODS OF INSTRUCTION

Instruction is based upon the case-book method. To the cases found in the case-book are added selected cases from Ohio and other jurisdictions. The lecture hour includes a thorough questioning of the students upon the cases studied and informal discussions by instructors and students upon the underlying and distinguishing principles illustrated by the cases.

ADMISSION

For admission procedure, see pages 13-15.

Candidates of good moral character may be admitted upon satisfying the following requirements:

(1) Graduation from a first-grade high school and

(2) The completion of not less than three-fourths of the credits acceptable for a Bachelor's degree at one or more accredited colleges or universities, in accordance with the rules of the institution from which such credits are presented. Usually this is 90 semester or 135 quarter hours. It is further required that the scholarship average of the applicant must not be below the graduation average of the institution from which the credits are presented.

Correspondence work is not accepted as pre-law credit.

In no case may a deficiency in pre-law study be made up concurrently with the work in the College of Law.

A student desiring to enroll in the College of Law applies to the Admissions Counsellor or to the Dean of the College of Law for an application blank.
(3) Advanced Standing. Upon approval of the Dean of the College of Law, advanced credit is given for not more than two years of law study in residence at any law school approved by the American Bar Association.

(4) Special Student. Persons who are not candidates for a degree and who have sufficient education and experience to study law with profit may enter the College of Law as special students with the approval of the Dean, even though they cannot meet the entrance requirements for a degree. Anyone desiring to enter as a special student or to secure fuller information in regard to preliminary education should write to the University Admissions Counsellor or the Dean of the College of Law. Such special students will not be eligible for the bar examination in Ohio and many other states.

REGISTRATION FOR THE OHIO BAR

Residents of the State of Ohio are required to register with the Supreme Court of Ohio at the time they commence the study of law. Others who intend to acquire residence in the state and to take the Ohio Bar examination should also register with the Supreme Court. The fee for this registration is $10.00 payable to the Clerk of the Supreme Court. Forms for this registration can be obtained in the office of the College of Law at the beginning of the fall quarter. The Supreme Court fee for taking the Ohio Bar examination is $80.00, which is payable shortly before the examination.

PRE-LAW AND ARTS-LAW COURSES

The College of Liberal Arts offers favorable opportunities to the student in preparing for the study of law. The pre-law course offered not only meets the requirements set by the Supreme Court of the State of Ohio as to the preliminary education that every student must have before beginning the study of law, but is especially planned to help the student to prepare properly for such an undertaking.

The arts-law course is designed for the student who desires the degree of Bachelor of Arts and the degree of Bachelor of Laws. By taking this course, which extends over a period of six years, the student not only meets the requirements set by the Supreme Court of the State
College of Law

of Ohio but in addition is entitled to receive the degrees indicated. For further information about these courses, the student is referred to the Liberal Arts section of this catalog.

GRADUATION

The degree of Bachelor of Laws is conferred on students who have completed satisfactorily a total of 122 quarter hours including all the prescribed courses, and in addition certain required courses for which no credit hours are given, or who have received credit therefor in accordance with the section entitled Advanced Standing and who have studied in residence at this College for at least three quarters immediately preceding graduation, and who have at least a two quality point average for every credit hour.

GENERAL REGULATIONS

1. A full-time student is any student who carries twelve hours or more per quarter.

2. Students may select from the courses offered such subjects as they desire, with the approval of the Dean, not to exceed a maximum of 16 credit hours per quarter.

3. In the section of the general catalog dealing with Administration are found rules and regulations pertaining to chapel and class attendance, registration, and preregistration, government, withdrawing courses, warning and probation, eligibility for extra-curricular activities, examinations, grade marks and quality points.

4. Expenses, tuition, fees, living costs, and housing are likewise described in an earlier section of this catalog.

5. The Board of Trustees and Faculty of the University reserve the right to make such changes as they deem necessary without published notice.

CLASSIFICATION

The minimum requirements for second year standing are thirty-eight credit hours and a point average of 2.0; for third year standing, eighty credit hours and a point average of 2.0.
OTHER ADVANTAGES

There are musical, debating, and dramatic societies and other organizations on the campus to which any student in the College of Law is eligible.

SUMMER QUARTER

The College of Law offers no courses during the Summer quarter.

COLLEGE OF LAW CURRICULUM

The work of the first year is all required. Second and third year courses are all required except those separately designated as electives, which are open to both second and third year students subject to the provision that a student may not elect to exceed sixteen hours in any quarter in which elective courses are open to him, unless approved by the Dean.

FIRST YEAR

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<td>Real Property II 5</td>
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<tr>
<td>Torts I</td>
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<td>WINTER QUARTER</td>
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SECOND YEAR

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<td>Moot Court II</td>
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<td>WINTER QUARTER</td>
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THIRD YEAR

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<td>Practice Court I</td>
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<td>Legal Ethics</td>
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<td>Trusts</td>
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* Courses are required for graduation but no credit hours are given toward the 122 hours required for graduation.
DESCRIPTION OF COURSES

FIRST YEAR

ALL COURSES REQUIRED

BUSINESS ASSOCIATIONS 5 hours
The nature, formation and purpose of agency and partnership relations; the duties and liabilities arising from the relationships; the marshalling of assets in equity and the priorities between individual and firm creditors; consideration of Workman's Compensation legislation and other phases of the subject of master and servant. Latty, *Introduction to Business Associations*.

CONTRACTS I 4 hours

CONTRACTS II 5 hours
Fundamental courses dealing with the nature of a contract; the capacity of the parties, offer and acceptance; consideration; the performance of contracts, including conditions and impossibility of performance; the discharge of contracts; rights of beneficiaries, joint and several contracts; assignment of contracts; illegal contracts and the statute of frauds. Shepherd, *Contracts and Contract Remedies* (4th Edition).

CRIMINAL LAW 5 hours
This course treats of the theories of crime and punishment; the criminal act and mental element in crime; specific offenses at common law and as developed by statutes; appropriate defenses in relation to the specific crimes; parties. Hall, *Cases On Criminal Law and Procedure*.

INTRODUCTION TO LAW 3 hours
The principal objectives of this introductory course are best stated in the language of the authors of the case book, and are as follows: "(1) to relate the study of law explicitly to the previous knowledge and experience of the student; (2) to convey quickly and efficiently certain fundamental information which the student should have at the outset; (3) to develop an insight in the sources of law in the States and in the Federal system; (4) to examine with care into the methods of judicial reasoning; (5) to show how law responds to social demands upon it, especially those of an economic nature; and (6) to impart a preliminary sense of the functions of the Legal profession." Gavit, Fuchs, and

**LEGAL BIBLIOGRAPHY**

1 hour

This course is required but no credit is given for it toward graduation. The purpose is to give the student training in the use of law books and in finding the law. The course must be completed to the satisfaction of the Instructor. Pollack, *Fundamentals of Legal Research*.

**MOOT COURT I**

Students participate in a moot case which has reached the appellate level, by writing briefs and making oral arguments before an appellate court which consists of upperclass students and faculty members. This course is required but gives no credit toward graduation.

**PERSONAL PROPERTY**

4 hours

This course deals with the distinction between real and personal property; of the title to personal property and its transfer by agreement and by operation of law; its use and liabilities arising therefrom. Casebook to be announced.

**REAL PROPERTY I**

5 hours

This course treats of the historical origin of land law, tenure, seisin, the differentiations of estates in land, titles and their transfer by act of the parties and operation of law. Casebook to be announced.

**REAL PROPERTY II**

5 hours

This course deals with rights in air, water, easements, covenants running with the land, leases, rents, waste, and public rights. Casebook to be announced.

**TORTS I**

3 hours

**TORTS II**

5 hours

This course includes a consideration of the bases and extent of legal liability for invasions of various interests of personality and property with especial attention given to wrongs, such as assault, battery, false imprisonment, trespass upon realty and personality, conversion, defamation, malicious prosecution, injuries resulting from negligence, injuries intentionally inflicted and liability without fault. An analysis is made of the various concepts of importance in this field of law, such as intention, malice, legal right and wrong, negligence and proximate causation. Smith and Prosser, *Cases and Materials on Torts*.
SECOND YEAR

Required Courses

CIVIL PROCEDURE COURSES
The courses in adjective law are designed to convey information, to develop critical thinking, and to turn out lawyers reasonably competent in the skills of trial practice. To secure these ends, the field of procedure is treated as a unit. For convenience in presentation, however, the subject matter is grouped into areas of study so that related material will be taught together. The courses are, therefore, divided as follows and are presented in consecutive quarters in the second year:

PROCEDURE I — JURISDICTION AND JUDGMENTS 4 hours
A series of related problems form the basis for this course: jurisdiction of state courts over the subject matter, the special problems of federal court jurisdiction, territorial extent of jurisdiction and venue, the steps to be taken to invoke the jurisdiction of the court, collaterally attacking a judgment for want of jurisdiction, the effect of judgments on the same or different causes of action, and the control exercised by the court over its judgments. Blume and Joiner, Jurisdiction and Judgments.

PROCEDURE II — PLEADING AND JOINER 4 hours
The course is divided into four parts. Part One deals with the rules of pleading currently in force under statutes and court rules. Part Two deals with four systems of joinder of claims and parties: common law, equity, code, and federal. Part Three relates to pre-trial objections to pleadings and joinder. Part Four contains text and cases on the forms of action. Blume and Reed, Pleading and Joinder.

PROCEDURE III — TRIALS AND APPEALS 4 hours
This course considers the relationship between the judge and jury, and the problems arising therefrom — selection of the jury, direction of the verdict, instructions, and the setting aside of the verdict. It also treats the problem of review — the parties, the foundation for review, the methods of review, and the steps in the review process. In addition, a serious attempt to teach the student how to try a lawsuit is made. Joiner, Trials and Appeals (Temporary edition).

CONSTITUTIONAL LAW I 3 hours

CONSTITUTIONAL LAW II 3 hours

Courses include the interpretation of the constitutional limitations for the protection of life, liberty and property, police power, taxation,
eminent domain, obligation of contract; and a consideration of the
law of the American federal system, with especial reference to inter-
state commerce, the powers of Congress and the jurisdiction of the
Federal Courts. Casebook to be announced.

**EQUITY**

5 hours

This course involves the consideration of the rise of the court of
equity, the powers of the court, the principles governing the exercise
of equitable jurisdiction, and the equitable remedies of injunction,
bills of peace, bills of interpleader, bills to remove cloud from title,
declaratory judgments, and specific performance. Cook, *Cases on Eq-

**EVIDENCE I**

3 hours

**EVIDENCE II**

3 hours

An examination of contemporary rules of evidence relating to bur-
den of proof and presumption, judicial notice, the examination of wit-
nesses, competency and privilege, and illegally obtained evidence, fol-
lowed by a careful development of the opinion rule, the hearsay rule
and its exceptions, and the best evidence rule. Morgan and Maguire,

**Moot Court II**

1 hour

This course gives further training in writing briefs and making oral
arguments on the appellate level. It is required but gives no credit
toward graduation.

**PRIVATE CORPORATIONS**

5 hours

This course treats of the characteristics of private corporations, in-
cluding their formation, powers, rights, and liabilities, the rights and
liability of stockholders, and of officers and directors, and the rights of
creditors against the corporation and its officers. Ballantine, Lattin and

**RESTITUTION**

3 hours

This course deals with a study of the remedies of quasi-contract,
equitable accounting, constructive trust, equitable lien, rescission and
reformation, and the legal and equitable remedies available in cases
of misrepresentation, fraud, partially performed agreements, mistake,
illegality, defective capacity and duress. Durfee and Dawson, *Cases on
Restitution.*
THIRD YEAR

Required Courses

CONFLICT OF LAWS 5 hours
This course treats of the principles of private international law, jurisdiction of courts; the choice of law governing torts, contracts, divorce, transfers of property by deed, will and intestate succession; marriage, adoption, domicile, foreign judgments and such procedural matters as statutes of frauds and of limitations. Stumberg, Cases on Conflicts.

DOMESTIC RELATIONS 3 hours
A study of the law of marriage and divorce, parent and child, the rights and liabilities of husband and wife, the rights and liabilities of infants, including a study of statutory material. Jacobs and Goebel, Cases on Domestic Relations (3rd Edition).

FEDERAL TAXATION 5 hours
This course deals with the major sources of federal revenue with particular emphasis on income and estate taxes. Bittker, Federal Income, Estate and Gift Taxation.

LEGAL ETHICS 1 hour
This course treats of the rules of conduct governing the lawyer in the practice of his profession. This course must be completed to the satisfaction of the Instructor, although no credit toward graduation is given. Cheatham, Cases and Materials on the Legal Profession (2nd Edition).

NEGOTIABLE INSTRUMENTS 5 hours
This course involves the consideration of the general principles governing bills of exchange, promissory notes and checks, and the uniform negotiable instruments law. Britton, Cases on Bills and Notes (4th Edition).

PRACTICE COURT I 1 hour

PRACTICE COURT II 1 hour
The first quarter consists of participation by the class in problems dealing with various phases of the trial, such as examining a witness, giving a closing argument to the jury, etc. Each class session takes up a different portion of the trial process, which is illustrated and discussed by members of the class and the Instructor.

The second quarter consists of preparing and trying a case from the
interviewing of the witnesses, who have witnessed a film portraying the incident on which the trial is based, to the verdict of the jury. These courses are required but give no credit toward graduation. Keeton, Trial Tactics and Methods.

**Trusts** 5 hours

**Wills and Administration of Estates** 4 hours

**ELECTIVE COURSES**

**Administrative Law** 3 hours
This course deals with the powers and procedure of administrative agencies in this country. It includes a consideration of the nature of the power vested in administrative bodies, distinction between legislative, judicial and executive powers, conclusiveness of administrative determinations, the requirement of due process, and the extent of judicial control over administrative action. Casebook to be announced.

**Creditors' Rights** 4 hours
This course includes a study of fraudulent conveyances, creditors' agreements, receiverships and the administration of bankrupt estates. Hanna and McLaughlin, *Cases on Creditors' Rights* (Consolidated 4th Edition).

**Damages** 3 hours
In this course the rules governing the measure of damages in actions founded on contract and tort are considered. Crane, *Cases on Damages*.

**Legal Drafting** 4 hours
Designed to give the student practice in the drafting of the more common legal instruments. Cook, *Legal Drafting*.

**Future Interests** 3 hours

**Insurance** 3 hours
This course includes the nature and requisites of the contract, parties, insurable interest, premiums, representations and warranties,
agents and their powers, waiver and estoppel, rights under the policy, a study of the standard fire policies, life insurance, marine and accident. Gable, *Cases on Insurance* (2nd Edition).

**LABOR LAW**

4 hours

This course includes a study of the right to organize the union; the process of collective bargaining; the legality of strikes, lockouts and boycotts; the interest of the public in labor disputes; legislative intervention, with emphasis on the National Labor Relations Act as amended by the Taft-Hartley Law. Casebook to be announced.

**MORTGAGES**

3 hours

The various theories of the mortgage including the historical evolution thereof in equity; recording statutes, and other problems in connection with the law of mortgages. Durfee, *Cases on Property Security, Vol. I.*

**SALES**

4 hours

The topics included in this course are the contract for delivery of goods, the statute of frauds, the passing of the property, fraud and retention of possession, illegality, condition and warranties, performance, rights of the seller and buyer in case of breach. Bogert and Britton, *Cases on Sales* (3rd Edition).

**MUNICIPAL CORPORATIONS**

4 hours

This course treats of the formation of and legislative control over public corporations (primarily cities and villages), the powers of such corporations with respect to public welfare, licenses and franchises, appropriations, indebtedness, contracts and special assessments, and the liability of such corporations in tort and contract. Casebook to be announced.

**SURETYSHIP**

3 hours

This course includes the creation of the relationship, the contract, the statute of frauds, the rights and remedies, the defenses, guaranty contracts, and letters of credit, private and corporate sureties, and incidentally a consideration of the different kinds of bonds. Simpson, *Cases on Suretyship.*
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