THE GEORGE FRANKLIN AND
SARAH CATHERINE GETTY

College of Liberal Arts

OSCAR G. DARLINGTON, Dean

DIVISIONS AND DEPARTMENTS

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

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

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

DIVISION IV: TEACHER EDUCATION. (HILDRED B. JONES, Division Head)
1) Elementary and Secondary Education
2) Industrial Arts
3) Physical Education
4) Public School Music
5) Public School Art
6) Business Education

Course descriptions will be found in the departmental listings beginning on page 47.

OBJECTIVES

The objectives of the College of Liberal Arts are: to develop in each student a love of learning and a reasonable competence in some significant area of knowledge; to help him evolve a mature philosophy which gives meaning to life, apart from its material accomplishments; to cultivate comprehensiveness of thought; to share in the intellectual and cultural 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 clarify knowledge by research and by re-interpretation of the old in the light of the new.

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 addition to the general requirements for admission to the University stated on page 6 of this catalog, the College of Liberal Arts accepts graduates of high school and non-graduates with fifteen acceptable units of high quality work who are recommended by the high school principal. Beginning in 1962, twelve of these fifteen units shall be in any combination of the following subjects: English (four years), languages, history, mathematics (one year of algebra required), and natural science. Deficiencies in entrance requirements may be made up to the extent of two units by taking the work during the freshman year or during the prior summer, or from other agencies approved by the University. Priority is given immediately to applicants with an Ohio "State Board Course in Basic Studies" certificate.

An acceptable score on the American College Testing Program (A.C.T.) or its equivalent is expected of all in-coming students, and the applicants shall also pass a proficiency examination in the use of the English language.

Students expecting to go to college are encouraged, but not required, to take two units of Latin and/or a modern foreign language while in high school.

High school seniors whose ability and maturity warrant, may, upon recommendation of the high school principal and with the approval of the Admissions Committee, take a limited amount of college work for credit either on campus or in the Evening Division during their senior year.

Students admitted with advanced standing from other accredited colleges and universities must be in good academic standing with their present institution at the time of their admission to Ohio Northern University. Students dismissed for academic reasons from other colleges normally undergo a waiting period of one calendar year before applying for admission to Ohio Northern University and are then admitted only after careful testing. Students transferring to the College of Liberal Arts from one of the other colleges within Ohio Northern University are also considered according to the above standards. In all cases only grades of C or better are transferrable.

COURSE OF STUDY

From the following listing of course offerings 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. A student is properly accepted as a major in any department and as a candidate for a particular degree only when, with the help of his faculty adviser, he has filled out a Declaration of Major card approved by the chairman of his department and of the dean of the college.

THE DEGREE OF BACHELOR 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 one year of English Composition, a quarter of Speech, two one-year courses in two of the social sciences, Historical Study and Philosophy and Religion (or a one-year course in Philosophy or Religion upon approval), six quarters in two of the natural sciences, one full year of advanced work in English or American Literature, one quarter in Art, one quarter in Music, and two years of one foreign language or their equivalent. 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.

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 faculty 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 can meet the professional education requirements as outlined on page 68, and will have a member of the Department of Education for a professional adviser.

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

Art
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

The following suggestion illustrates 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.

Freshman Orientation.
English Composition, C-1, 2, 3, or 131, 132, 133.
A year of Social Science, normally Western Civilization.
A year of Natural Science, usually Mathematics 111, 112, 113.
A Foreign Language.
An elective (which may be chosen according to his objective, if the student has already chosen his objective).
Physical Education.

SOPHOMORE YEAR.

Second Year of Foreign Language.
Second Year of Natural Science.
Second Year of Social Science
or
*One course in the field of Concentration.
American or English Literature.
Historical Study of Philosophy and Religion, C-31, 32, 33.
Quarter courses in Music, Art, Speech.
Physical Education.

*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.

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.

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 but they are in addition to the 180 academic hours required for graduation.) The only exception to this policy is the B.A. in Music when the student fulfills the stipulated B.A. liberal arts requirements but does not need 120 quarter hours outside the Department of Music.

THE DEGREE OF
BACHELOR OF SCIENCE

The curricula of candidates for the degree of Bachelor of Science includes the courses prescribed for the degree of Bachelor of Arts, outlined on page 37 of this catalog. At the end of the first year, or at the latest the end of the second year, the student must choose the department within the natural science division in which he desires to complete his field of concentration. He shall secure, in writing, on standard Declaration of Major cards, the approval of that Department Chairman. The candidate for the Bachelor of Science degree shall complete in logical sequence the following:

1. The concentration of the requirements of the department.
2. A minimum of 80 quarter hours of work in the Division of Natural Science.

It is possible for a student to major in any natural science department under the Bachelor of Arts program. The degree of Bachelor of Science is designed to meet the needs of students planning to do graduate work in the natural sciences or preparing for industrial positions.

THE DEGREE OF
BACHELOR OF SCIENCE IN EDUCATION

The curricula of candidates for the degree of Bachelor of Science in Education as established by the liberal arts faculty also meet the requirements of the State Department of Education for teacher certification.

The prescribed liberal arts courses for the degree of Bachelor of Science in Education are: English Composition, one three-hour course in Speech,
two one-year courses in two of the social studies (not psychology), one year of literature, either English or American, one quarter of Art, one quarter of Music, the Philosophy Core or nine hours of Bible, and a minimum of sixteen quarter hours of natural science including Math 111, 112.

In view of the increasing interest in foreign language study in the elementary school, candidates for the B.S. in Education degree are advised to take at least one year in this field.

Elementary Education students major in Elementary Education and are advised by the Chairman of the Department of Education and members of the department under his direction.

Secondary Education students, working for either an A.B. or a B.S. in Education degree, meet the A.B. requirements for a major in an academic field under the direction of its department chairman, and complete their professional education courses for certification under advisement from the Department of Education. Or, they can be certified with a "comprehensive major" as defined by the State Department of Education in one of the following fields: Business Education, Health and Physical Education, Industrial Arts, Public School Music, Science and Social Sciences. In each case, a subject-matter adviser appointed by the Dean of the college, has co-responsibility along with the Director of Teacher Education for proper advisement.

The Division of Teacher Education, in cooperation with the other divisions within the College of Liberal Arts, offers programs 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 the prescribed courses.

   b) **Two-year Cadet Program.** Cadet certification is permitted with two years of teacher preparation, provided the student maintains a 2.5 accumulative average. To be eligible for such a certificate, the student must have completed a minimum of 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 Provisional Special Certificate.

3. **INDUSTRIAL ARTS EDUCATION** leading to a major or minor in the field of Industrial Arts and qualification for the Four Year Provisional or Four Year Provisional Special Teaching Certificate.
4. **PUBLIC SCHOOL MUSIC**
   a. Four year Provisional in Music
   b. Four year Special in Music

5. **SECONDARY EDUCATION**
   a. Art
   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 (including Theatre)

6. **SECRETARIAL**
   a. Special in Business Education
   b. Bookkeeping-Social Business
   c. Stenography-Typing

**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 are expected to have those personal and social qualities which are essential to success in the field of nursing. This curriculum is of special interest to young women of northwestern Ohio.

ARTS-LAW

Beginning in the fall of 1960, a baccalaureate degree became an admission requirement for all Ohio Colleges of Law. It is assumed that in general a broad liberal education is the best foundation for the study of law.

ARTS-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 or 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 or 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 or 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

Religious Education is gaining recognition as a profession and, accordingly, professional education beyond the baccalaureate level is expected of the full-time worker. Graduate and professional schools offer curricula leading to the Master's Degree in Religious Education (M.R.E.) or the Bachelor of Divinity (B.D.) degree with a major in Religious Education. Ohio Northern offers an A.B. program appropriate for admission to these schools. For those interested in preparing for temporary or part-time work in religious education, Ohio Northern offers a "field of concentration" in the Department of Philosophy and Religion with appropriate technique courses taken in the Department of Education.

PRE-THEOLOGY

Ohio Northern has a vigorous program for pre-theological students. The recommendations of the American Association of Theological Schools are followed in counseling the student in planning his program leading to the A.B. degree. An interdisciplinary major in the Department of Philosophy and Religion, or a major in another appropriate department may be selected. In general, a broad, liberal course enables the student to appreciate his graduate studies to the fullest extent. Emphasis throughout this program is upon Christian idealism designed to develop spiritually-minded young men well-equipped for serious dedication to the Christian ministry.

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 a high peak. To 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 and
in foreign languages 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 seventeen 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. A normal program consists of twelve to seventeen scheduled hours excluding physical education. Exceptions allowed above seventeen hours, on approval of the Dean of the College, include choir, band, or theatre workshop. All work below twelve or above seventeen hours is pro-rated at the rate of $21 per credit hour.

2. All new students in the College of Liberal Arts are required to take one quarter of Freshman Orientation. This is normally offered in the fall quarter.

3. The student indicates his choice of a major field of concentration by filling out a Declaration of Major card attainable in the office of the Dean of the college and secures the signature of the department chairman. The completed card indicates that the department accepts a student as a major. To change from one department to another, the student shall complete a Change of Major card, also attainable in the office of the Dean. A student is officially accepted as a major in a department only when he has completed the above procedure.

4. No course for which the student has received a "D" is acceptable toward a field of concentration.

5. Seniors taking courses in the "100" series in other than Foreign Languages or Mathematics must complete additional work of a high quality for full credit. Seniors selecting "100" courses should consult the Dean of the college.

6. Juniors and seniors are required to schedule a majority of their courses from the "300" and "400" group.

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 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 a majority of their schedule among courses of "300" and "400" classification unless modification of this require-
ment 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 offered 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 with all freshman and sophomore requirements completed; for senior standing, 130 credit hours and the satisfactory completion of the English Proficiency Examination.

WARNING AND PROBATION

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

An accumulative quality point average of 1.9 is required for admission to sophomore rank in good standing; 1.9 also is the average required for satisfactory standing throughout the sophomore year.

An accumulative quality point average of 2.0 is required for admission to junior rank in good standing; 2.0 also is the average required for satisfactory standing throughout the junior and senior years.

If a student's quality point average for any quarter falls below that designated for satisfactory standing in that year (see above), the student will be placed on warning.

If a student on warning receives a quality point average for the following quarter lower than that stipulated for satisfactory standing in that year (see above), he will be placed on probation, and so long as he is on probation he will not be permitted to represent the university by participating in extra-curricular activities. If his quarter average rises to the required level but his accumulative average is still below the required level, he will be continued on probation.

Any student with an unusually low quality point average for any quarter may be placed directly on probation by the Dean of the College even though he has not been on warning in the previous quarter.

A student on probation whose average for the following quarter is below
the required minimum for that quarter and whose accumulative average is also below the minimum may be recommended to the President for suspension or dismissal from the University.

Students other than beginning freshmen who have been admitted on probation may be required to earn a quality point average higher than 2.0 in their first quarter at Ohio Northern.

Students may also be placed on strict probation. These students must report in person every two weeks to the office of the Dean of the College until such time as they are removed from this classification.

Any student who has been on probation and has been restored to satisfactory standing is placed directly on probation in any subsequent quarter for which his quality point average falls below the required minimum for that quarter.

SENIOR COMPREHENSIVE EXAMINATION

To assist each student to integrate his knowledge in his major field, and to test the overall quality and maturity of his work, a comprehensive examination covering the work in his major department shall be required of each student during the winter or spring quarter of his senior year. He shall be examined by a committee of the faculty appointed by the Dean of the College in consultation with the department chairman, and the committee shall include one member of the faculty outside the division of the student’s major interest.

The examination can be a written or oral examination, or both, at the discretion of the committee chairman, who is usually the chairman of the student’s major department.

Students who pass this examination will have recorded on the official transcript of their records the statement, “Passed (or passed with distinction) the senior comprehensive examination in __________.” Students who fail will have nothing placed upon their transcripts. All students will meet a reasonable time after the examination with the department chairman who will go carefully over the strengths and weaknesses of their examination.

GRADUATION

As a condition of graduation with the Bachelor’s degree, a student must complete a minimum of 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.
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-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.

THE DEPARTMENTAL COURSES

ART

ASSISTANT PROFESSOR WEST (Chairman)
MR. FINK

The department seeks to develop within the student an understanding of the fine arts, to foster within the University an awareness of art as an essential ingredient of an educated person, and provides opportunities for developing proficiency in various art media.

A. B. students concentrating in art complete a minimum of 45 hours within the department above 103 including Art 201, 202, 203 and other courses distributed throughout the practical fields by advisement according to individual needs. Such students can qualify for a Provisional Certificate as a teacher of art (special). Students preparing as supervisors or teachers of art in the elementary or secondary school are required to complete 76 hours in art and, therefore, need 196 hours for graduation. Specific requirements include Design (9 hrs.), Drawing (12 hrs.), Painting (9 hrs.), Commercial Art and Lettering (3 hrs.), Sculpture (3 hrs.), Crafts (14 hrs.), History of Art (9 hrs.), and electives in the field (17 hrs.).

A student majoring in art arranges a public exhibition of his work in his senior year as part of the graduation requirement.

101-102-103. ART FOR ELEMENTARY TEACHERS 6-9 hours

A course designed for prospective classroom teachers in the elementary schools; materials, techniques, and methods of utilizing them is stressed.

111, 112, 113. DRAWING 9 hours

The methods and media of Graphic Expression are dealt with in relation to composition in black and white; laboratory.
121, 122, 123. DESIGN
Tools, elements and principles of Design are presented in relationship to the solution of given problems of the artist/student.

200. INTRODUCTION TO ART
A one quarter brief survey of the visual arts with emphasis placed on the appreciation and judgment of those visual arts. Illustrated lecture.

201-202-203. ART HISTORY
An historical study of style in the arts of painting, sculpture and architecture from pre-historic times to the present. Illustrated lecture.

221, 222-223. CERAMICS
The methods of forming, decorating, and glazing clay bodies; coil, slab, thrown, and cast. Laboratory.
Prerequisite: 123 Design. Laboratory.

231, 232-233. PAINTING
Oil, watercolor, and/or casein. Methods and techniques with emphasis on technique and composition.
Prerequisite: Design and Drawing. Lab.

241. LETTERING
The use and practice of calligraphy with emphasis on student practice. Laboratory.
Prerequisite: Drawing and Design.

242-243. DESIGN APPLIED TO MATERIALS; I AND II
A crafts course designed to acquaint the student with common materials and their application to an art program in the public schools with the emphasis placed on originality as well as the finished product. Lab.
Prerequisites: Design and Drawing.

301, 302-303. PRINTMAKING
The techniques of making multiple drawings by the Planographic, Intaglio, and Relief processes. Laboratory.
Prerequisite: Permission of instructor.

311, 312, 313. THREE DIMENSIONAL DESIGN
The manipulation and composition of plastic materials. (Sculpture). Laboratory.
Prerequisite: Design and permission.

401. ADVANCED PAINTING
For students who wish to develop an advanced understanding and ability in one of the painting media. May be repeated to 9 hours. Permission. Lab.

402. ADVANCED THREE DIMENSIONAL DESIGN
Individual problems in 3-dimensional materials for the advanced student. Laboratory and permission.
Prerequisite: 313. May repeat to 9 hours.
440. ART PROBLEMS 1-3 hours
May be repeated to maximum of 9 hours in any area within the department. Primary purpose of this course is to allow the advanced student to engage in independent study of any approved problem within the realm of the department. At least 1 hour must be scheduled the senior year which will cover the students public exhibit of his work. Permission.

SUGGESTED PROGRAM
FOR
FOUR YEAR ART MAJOR; A.B./B.S.Ed.

FRESHMAN:
Liberal Arts Orientation (1) Quarter Hours per course
History 9
English 9
Biology, Botany, Math., or Chem. 12-13
Physical Education (3)
Design 121, 122, 123 9
Drawing 111, 112, 113 9

52-53 Total

SOPHOMORE:
Philosophy 9
Art History 201, 202, 203 9
Lettering 3
Design Applied to Materials, I & II 6
Painting/Ceramics/3D Design (one only) 9
Free Elective 9
Physical Education (3)

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JUNIOR:
English or American Literature 9
Psychology 201-202, 323 9
(one only) 3D/Paint./or Ceramics 9
Art Elective 6
Speech 3
Foreign Language* 12

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SENIOR:
Foreign Language* 12
Art Electives 18
Electives in Other Fields 18

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**SPECIAL NOTE:**

Those students who plan to receive the B.Sc. in Art Education substitute the required professional education courses for Foreign Language. It is recommended that the student who plans to major in art declare his desire no later than the sophomore year or he may have to spend some time in excess of 12 quarters in order to fulfill the minimum requirements.

**BIOLOGY**

ASSOC. PROF. BOWDEN (Chairman), PROF. STAUFFER,
ASST. PROF. SNYDER, ASST. PROF. BUTLER, MR. HOCH

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.
121-122-123. ANATOMY AND PHYSIOLOGY FOR NURSES  9 hours
(3 hours per quarter)
An introductory course designed to develop in the student an appreciation
and understanding of the structure and function of the human body.
The laboratory includes dissection of a representative mammal and experi-
ments illustrating physiological principles. Lecture, discussion, laboratory, 5 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. Field study
emphasized. Lecture and class work, 1 hour; laboratory, 6 hours. Permission
of 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 dis-
cussion and laboratory dissection of the different systems in representative
forms. In embryology general principles of vertebrate development are dis-
cussed; 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 stand-
point, 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.

331, 332, 333. PHYSIOLOGY AND ANATOMY  12 hours
All sessions held in the Julius and Fannie Rogoff Laboratory of Physiology.
A course designed to develop in the student an appreciation and under-
standing 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.

### 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. Permission of instructor.

### 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

3 hours

A study of the principles of inheritance in plants and animals with considerable emphasis on human inheritance and the problems of eugenics.

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

### 433. EVOLUTION

3 hours

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.

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**CHEMISTRY**

**ASSOCIATE PROF. WRIGHT (Chairman), PROFESSOR RANDALL,**

**DR. KLING, MR. ROBINSON, MRS. WRIGHT, MR. LEE, (Leave of Absence)**

The objectives of this department are to give thorough instruction in the fundamentals and techniques of the science of chemistry, to furnish an adequate preparation for those students who wish to adopt chemistry as their profession, and to afford an introduction to and an appreciation of a natural science to liberal arts students in any field. The department will provide a solid foundation in chemistry for students preparing to teach chemistry in secondary schools and for students in various related fields such as pharmacy, pre-medicine, etc.
Students majoring in chemistry may choose their program according to two different options: (1) a program for those who intend to adopt chemistry as their profession. This program is outlined in detail below. It is in harmony with the requirements of the American Chemical Society for an adequate undergraduate program in chemistry, (2) a program for those who do not desire or cannot take as thorough a training in chemistry. However, a student wishing to concentrate in Chemistry under this latter option must complete the following courses: Chemistry 111-112-113, 211-212-213, 221-222-223, and 331-332-333.

BASIC CURRICULUM FOR MAJORS IN CHEMISTRY

FRESHMAN YEAR

Chemistry 111, 112, 123, General Chemistry and Qualitative Analysis 13 QTR. HOURS
Mathematics 131, 132, 133, College Algebra and Trigonometry, Analytical Geometry, Calculus I 15
English C-1, C-2, C-3 9
Social Science Course 9
Physical Education 3
Liberal Arts Orientation (1)

Total 50

SOPHOMORE YEAR

Chemistry 221, 222, 223, Quantitative Analysis 12 QTR. HOURS
Mathematics 221, 222, Calculus II and III 10
Physics 241, 242, 243, General Physics 15
English or American Literature 9
Physical Education 3
Elective (Math. 223 recommended) 3 to 5

Total 52 to 54

JUNIOR YEAR

Chemistry 211, 212, 213, Organic Chemistry 12 QTR. HOURS
Chemistry 331, 332, 333, Physical Chemistry 12
German 101, 102, 103, Elem. German 12
Philosophy C-31, C-32, C-33 9

45
SENIOR YEAR

Chemistry 401, Chemical Literature 1 QTR. HOURS
Chemistry 421, Organic Qualitative Analysis 3
Advanced Chemistry Course, 400 series 6
Physics 303, Modern Physics 3
German 221, 222, 223, Scientific German 9
Art, Music, Speech 9
Elective in Social Science 9
Other Electives 8

TOTAL 48

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 4 hours
This course consists of a brief introduction to the major concepts of chemistry, designed to fulfill the needs of students of nursing. Three hours lecture and one two-hour laboratory period per week.

105. INTRODUCTORY CHEMISTRY 3 hours
(No credit for science majors)
A course designed to furnish an understanding of the important principles and applications of chemistry in everyday living. Required of students in elementary education. The course does not prepare the student for advanced courses in chemistry. Three hours lecture 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. Chemistry majors and pre-pharmacy students take Chemistry 111, 112 and 123 as a one-year sequence. Three hours lecture and one three-hour laboratory per week.
Prerequisite: 1 unit of high school algebra.

123. ELEMENTARY QUALITATIVE ANALYSIS 5 hours
A laboratory course in semi-micro qualitative analysis of acids, bases and salts, with emphasis on the salts of the common metallic elements. To be taken in lieu of Chemistry 113 by chemistry majors and pharmacy students and others who desire a more thorough course in qualitative analysis than that afforded by taking Chemistry 113. Three hours lecture and two three-
hour laboratory periods per week.
Prerequisite: Chemistry 112.

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 atten-
tion will be given to natural products and to the industrial and biological
applications of organic chemistry. Three hours lecture and one three-hour
laboratory periods per week.
Prerequisite: Chemistry 112.

221-222-223. QUANTITATIVE ANALYSIS 12 hours
The study of standard methods of chemical analysis both volumetric and
gravimetric, and of the chemical principles on which these methods are
based. During the third quarter some work will be done on instrumental
methods of analysis. Two hours lecture and two three-hour laboratory
periods per week.
Prerequisite: Chemistry 113 or 123.

331-332-333. PHYSICAL CHEMISTRY 12 hours
A beginning course in physical chemistry dealing with introductory
thermodynamics, solutions, physical properties and molecular structure, chemi-
cal equilibria, chemical kinetics, electrochemistry, and colloid chemistry.
Lecture three hours, one three-hour laboratory period per week.
Prerequisite: Chemistry 223, Physics 243, Mathematics 222.

341-342-343. ELEMENTARY BIOCHEMISTRY 6 hours
Chemistry and metabolism of proteins, carbohydrates, lipids, other natural
products, other compounds of medical significance, and of living tissues and
biological fluids. Lecture two hours per week.
Prerequisite: Chemistry 213.

401. CHEMICAL LITERATURE 1 hour
A library problem course designed to provide the student with experience
in the use of a scientific library. Discussion, 1 hour per week.
Prerequisites: Chemistry 213, 333.

402. ADVANCED INORGANIC CHEMISTRY 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. Lecture 3 hours per week.
Prerequisites: Chemistry 213, 333.

411-412-413. ADVANCED ORGANIC CHEMISTRY 6 hours
An advanced course involving the study of steric, inductive, and resonance
effects in organic chemistry. There will be discussion of the use of isotopes
and chemical kinetics for the elucidation of mechanisms of organic reactions.
Lecture 2 hours per week.
Prerequisite: Chemistry 213, 333.
421. 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, 223.

431-432-433. ADVANCED PHYSICAL CHEMISTRY 6 hours
An advanced course covering such selected topics as: x-rays and atomic spectra, molecular spectra, nuclear structure, quantum theory, photochemistry, and advanced topics in thermodynamics and chemical kinetics. Lecture 2 hours per week.
Prerequisite: Chemistry 333.

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. By arrangement any quarter.

ECONOMICS AND BUSINESS ADMINISTRATION
ASSOCIATE PROFESSOR THOMAS (Chairman),
ASSOCIATE PROFESSOR COOLEY, ASSOCIATE PROFESSOR RITZ,
ASSOCIATE PROFESSOR HIBBARD (Leave of Absence),
ASSOCIATE PROFESSOR HUMPHREY, MR. STAUFFER AND
SPECIAL LECTURERS.

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. All students should gain an understanding of basic economics, and those intending to enter business are advised to major in the Department.

Students majoring in the Department are required to take a minimum of 45 quarter hours within the Department. These must include Economics 201, 202, and 203, which are prerequisite to several advanced courses. Other required courses are: Economics 131, 132, 133, 181 (can be omitted if student has thorough preparation in mathematics), 182, 283, 322, 352 and 353.

Beginning with the sophomore year, the students majoring in the department are advised, but not required, to choose their electives according to one of the following options:

Accounting (for those students who desire to enter the field of accounting, public or private, or related fields in management). Electives should include:

- Intermediate Accounting 301
- Cost Accounting 312
- Advanced Accounting 452
- Income Tax 381-382
- Auditing 403
- Budgeting 413
- Marketing 351
- Corporation Finance 362
- Business Communications 391
Business Administration (for those who desire to become business executives). Electives should include:

- Labor Economics 341
- Business Organization 213
- Personnel Management 363
- Business Communications 391
- Cost Accounting 312
- Budgeting 413
- Corporation Finance 362
- Business Law 323
- Marketing 351

Business Education (for those who wish to qualify for a State Comprehensive License in Business Education, which qualifies the student to teach any business subject offered in the Secondary School). Electives should include:

- Typing 101, 102, 103
- Shorthand 111, 112, 113
- Shorthand & Transcription 211, 212
- Secretarial Practice 223
- Office Machines 222
- Business Communications 391
- Business Organization 213
- Salesmanship 371
- Advertising 372
- Insurance 462
- Marketing 351
- Income Tax 381

Economics (for those who wish to teach Economics at the college level, study and write in the field of Economics, become professional economists employed by business firms or by government, or those who have no specific vocational aim). Electives should include:

- Labor Economics 341
- Corporation Finance 362
- Intermediate Economic Theory 383
- Comparative Economic Systems 411
- International Economics 421
- Economic History of Europe 441
- Economic History of the United States 442
- History of Economic Thought 443
- Investments 461

Finance (for those who plan to enter banking, investments or other branches of finance). Electives should include:

- Business Organization 213
- Intermediate Accounting 301
- Corporation Finance 362
- Business Communications 391
- International Economics 421
- Public Finance 423
- Investments 461
- Insurance 462

Industrial Management (for those who wish to make a career in management of industrial firms). Electives should include:

- Business Organization 213
- Cost Accounting 312
- Production Control 331
- Labor Economics 341
- Marketing 351
- Corporation Finance 362
Time and Motion Study 332
Quality Control 333
Business Law 323
Budgeting 413

Personnel Management 363
Advertising 372
Business Communications 391

Merchandising (for those who seek to specialize in marketing, market research, or sales management). Electives should include:
Marketing 351
Corporation Finance 362
Personnel Management 363
Salesmanship 371
Advertising 372
Transportation 373
Business Communications 391
Insurance 462
Budgeting 413

Personnel Management (for those who seek to be personnel executives of firms, dealing with employment problems and policies). Electives should include:
Business Organization 213
Production Control 331
Time and Motion Study 332
Labor Economics 341
Personnel Management 363
Salesmanship 371
Business Communications 391
Budgeting 413

Secretarial (for those who wish to be secretaries and executive-assistants).
Electives should include:
Typing 101, 102, 103
Shorthand 111, 112, 113
Shorthand & Transcription 211, 212
Office Machines 222
Secretarial Practice 223
Business Communications 391
Business Organization 213
Cost Accounting 312
Labor Economics 341
Personnel Management 363
Budgeting 413

Business-Engineering (special attention is called to the five-year program which grants two diplomas—one in Liberal Arts at the end of four years and the Engineering degree at the end of the 5th year. The program is designed for those who desire to meet the demands of industry for a knowledge of management, accounting, and expertness in a field of engineering.) Electives in Liberal Arts should include:
Business Organization 213
Labor Economics 341
Income Tax 381
Cost Accounting 312
Budgeting 413
Time and Motion Study 332
Production Control 331
Quality Control 333

The special Associate of Arts certificate is awarded for two years of special training in Accounting, Industrial Management, or Secretarial Science.
### SUGGESTED BASIC CURRICULUM FOR MAJORS

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Liberal Arts Orientation</td>
<td>1</td>
</tr>
<tr>
<td>English C-1, C-2, C-3</td>
<td>9</td>
</tr>
<tr>
<td>History 111, 112, 113</td>
<td>9</td>
</tr>
<tr>
<td>Biology, Chemistry, Physics or Mathematics</td>
<td>12-13</td>
</tr>
<tr>
<td>Econ. 131, 132, 133</td>
<td>9</td>
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<tr>
<td>Typing</td>
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<tr>
<td>Physical Education</td>
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**Total** 45

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Philosophy C-31, 32, 33 or 201, 202, 203</td>
<td>9</td>
</tr>
<tr>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 201, 202, 203</td>
<td>9</td>
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<tr>
<td>Math. of Finance 181, 182, Statistics 283</td>
<td>11</td>
</tr>
<tr>
<td>Physical Education</td>
<td>3</td>
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<tr>
<td>Electives</td>
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**Total** 47

#### JUNIOR YEAR

<table>
<thead>
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<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>English or American Literature</td>
<td>9</td>
</tr>
<tr>
<td>Econ. 322, 352, 353</td>
<td>9</td>
</tr>
<tr>
<td>Art, Music</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 201-2, 323</td>
<td>9</td>
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<tr>
<td>Foreign Language*</td>
<td>12</td>
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<tr>
<td>Elective</td>
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**Total** 48

#### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Foreign Language*</td>
<td>12</td>
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<tr>
<td>Electives in Major Field</td>
<td>27</td>
</tr>
<tr>
<td>Electives in Other Fields</td>
<td>9</td>
</tr>
</tbody>
</table>

**Total** 48

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*Students who aim to teach and who are candidates for the Degree of Bachelor of Science in Education may omit Foreign Language, substituting the required courses in Education.*
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)

181-182. Mathematics of Finance 8 hours
(See Mathematics 181-182)

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. Current economic problems are analyzed. (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.

222. Office Machines and Practice 3 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, calculating and bookkeeping machines. A study will be made of the applications of the accounting machines, the punch card systems and the electronic computers.

283. Statistics 3 hours
(See Mathematics 283)

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 cost accounting. (Not offered in 1961-62.)
Prerequisite: Economics 301.

322-323. Business Law 6 hours
The first quarter is required of all economics majors and must be taken before taking 323. Business Law takes up the legal aspects of common business transactions involved in the making of contracts, the formation and
legal results of agencies, the legal principles of real estate transactions, the law governing the marketing of goods as it relates to personal property, and negotiable instruments. The course also surveys labor law and legislation, setting forth the rights and responsibilities of employers and of employees and examining the public interest in labor disputes.

331. PRODUCTION CONTROL 3 hours
The principles and methods of planning and controlling the production of goods are studied. Procedures used in manufacturing establishments in the controlling of production operations, procurement, inventory, tools, loading, intra-company traffic and communication, design, mechanization and automation are analyzed.

332. TIME AND MOTION STUDY 3 hours
The theory and application of time and motion study techniques to the improvement of industrial operations. Process charts, fatigue, and relation of time standards to wage incentives are among the subjects studied.

333. QUALITY CONTROL 3 hours
The principles and methods of controlling the quality of materials, workmanship and inspection, as well as the procedures in establishing standards, tests and comparisons of products, are studied. The student is familiarized with the use of statistical quality control charts and acceptance sampling techniques as tools of scientific management.

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.

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 201-202-203.
362. CORPORATION FINANCE
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
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
A study of the background, modern requirements and techniques of salesmanship, with controlled experience in actual selling in cooperation with neighboring businesses and industries.

372. ADVERTISING
A general course for the benefit of those who aim to enter advertising, as well as a survey designed to teach what every business executive needs to know about the field. All types of advertising media are discussed. Both national and retail advertising are treated. The organization and administration of advertising departments and of advertising agencies receive emphasis.

373. TRANSPORTATION
A study of the economics of transportation — waterway, railway, highway, pipeline, and air. The story of the development of transportation in the U.S. is reviewed. Rates and their effect on location and development of industry, government regulation, and labor relations are examined.

381-382. FEDERAL INCOME TAX
Federal taxation and income tax reporting.
The first quarter is devoted to a study of personal; the second quarter, to corporation tax reporting.

383. INTERMEDIATE ECONOMIC THEORY
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. (Not offered in 1961-62.)

391. BUSINESS COMMUNICATIONS
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** 1—3 hours
   A special workshop on current problems in Economics or Business Administration 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.
   **Prerequisite:** Seniors majoring in the department, or on approval of instructor.

403. **Auditing** 5 hours
   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** 3 hours
   Critically evaluates capitalism, socialism, facism, 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** 5 hours
   Procedure for estimating income and expenses; the organization for controlling those expenditures and for measuring the operating efficiency of the organization. (Not offered in 1961-62.)
   **Prerequisite:** Accounting 301.

421. **International Economics** 3 hours
   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 multi-lateral trade are examined. Scarce resources, population, and employment trends are studied in relation to their bearing on world economics. (Not offered in 1961-62.)

423. **Public Finance** 3 hours
   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 and Business** 3 hours
   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.

441. **Economic History of Europe** 3 hours
   To understand present-day economics, it is necessary to study the beginnings of trade, medieval economic relationships, and the rise of invention and technology culminating in the Industrial Revolution. The spread of empire and the economic rivalry leading to World War I receive attention.
442. **Economic History of the United States** 3 hours
After a brief examination of economic life in colonial America and the East-West migration, this course focuses upon the development of modern business and industry in the United States, with especial attention to the corporation and its part in the nation's growth. The causes and consequences of the great depression are studied.

443. **History of Economic Thought** 3 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.

452. **Advanced Accounting** 5 hours
*Prerequisite: 311.*

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.

462. **Insurance** 3 hours
A course designed to acquaint the student with the general principles of insurance and their chief applications—life, health and disability, fire, casualty and marine. Corporate bonding, pensions and group insurance are studied. Actual insurance problems are presented by experienced operatives.

**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.

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 113.

391. **BUSINESS COMMUNICATIONS** 3 hours

See page 62.

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 application 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.

370. **COMPUTER PRINCIPLES** 3 hours

A basic course in programming of electronic digital computers. Detail study is given to characteristics of computers, computer programming and computer coding, and accounting, auditing, and data protection. Laboratory experience is provided on available computers in the classroom.

*Prerequisites:* Cost Accounting and Office Machines.

470. **CO-OP PROGRAM (BUSINESS INTERNSHIP)** 3 hours

_may be repeated_

An "on-the-job" learning experience wherein students will work in industry (accounting, secretarial, data-processing) doing actual business operations. The student may not earn more than 3 hours of credit in any one quarter. The student must be a senior (or have permission of the director of the co-op program), have a minimum scholarship of 3.0 quality points per scheduled hour and have completed the prescribed prerequisites for their internship program:

Accounting—29 hours in accounting

Secretarial—Secretarial practice

Data Processing—Principles of account and office machines (or Computer principles)
EDUCATION

PROFESSOR JONES (Chairman)
PROFESSOR HANSON
PROFESSOR ZAUGG
PROFESSOR JORDAN
PROFESSOR BEHRENS
PROFESSOR ROBERSON
ASSISTANT PROFESSOR EARL
ASSISTANT PROFESSOR VAN ATTA
ASSISTANT PROFESSOR MACNAUGHTON

See pages 37-41 for description of curricula and degrees.

The Teacher Education Program is designed primarily to aid present and prospective teachers in helping themselves, children and youth identify and meet more effectively their physical, mental, social, personal, and spiritual needs. It is realized that self-improvement will occur among Education students as they develop successful techniques in the promotion of the learning process, and acquire useful knowledge that they can impart to others.

Experiences in working with children and youth in varied situations are provided that enable Education students to relate theory to practice and to use content in the actual solving of significant problems of living. Evaluating education in terms of human growth and development is stressed.

In trying to realize these objectives university and public school experiences are utilized.

More specifically the Teacher Education Program is designed:

1. To strengthen the quest for knowledge, and understanding of ways of using this knowledge for the good of self and others.

2. To encourage initiative and creativity by discovering and utilizing the special interests and abilities of children, and helping them to broaden their interests and abilities. To aid the fast-learning child in using fully his capacities, and the slow-learning child to move at a progressive rate without frustration.

3. To promote a school program consistent with discoveries of human growth and development, and to try to promote the same mentally hygienic conditions for college students that are advocated for children.

4. To diagnose, alleviate, and help prevent personal dissatisfactions and misunderstandings, through fostering good human relationships and using effective counselling techniques.

5. To aid individual students in solving their personal problems, and
discovering ways to provide an environment that will better meet human needs.

6. To discover and use a wide variety of learning materials and aids that will provide new, rich, and varied experiences.

7. To share ideas and suggestions with others who are concerned with carrying out school and community projects which cut across various areas of instruction.

8. To evaluate student or child growth on the basis of all around growth and development.

GENERAL COURSES

121. INTRODUCTION TO EDUCATION 2 hours
This course is designed to acquaint students with the teaching profession; its requirements, opportunities, and problems. Special emphasis is placed on the nature and function of our educational system (a first course for all students in the Division of Teacher Education).

213. EDUCATIONAL PSYCHOLOGY 3 hours
A study of the learning process and conditions that promote learning. Prerequisite: Psychology 201 or permission of the Instructor.

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.

401. HISTORY AND PHILOSOPHY OF EDUCATION 3 hours
This course is designed to promote a better understanding of modern educational practice through a study of historical changes in instructional processes and ideas. Emphasis is placed upon the study of educational beliefs and points of view in an attempt to foster critical thinking which will lead to a clearer understanding of the role of the school in American Democracy.

402. SCHOOL ADMINISTRATION AND ORGANIZATION 3 hours
A course designed to present the scope and general character of the American public school system, its organization and administrative units and other agencies through which it is managed, and the administrative tasks for which a classroom teacher is responsible.

410. NATIONAL SYSTEMS OF EDUCATION 3.6 hours
An investigation of the cultural attributes of the world’s foremost races and nations with special reference to the school systems responsible for some of the behavior differences of various peoples. An attempt to discover bases for better understanding and cooperation in the social and political realm. A review of international studies dealing with advances made on the ele-
mentary and secondary grade levels. A description of the great universities of the world and their contributions to a superior standard of living.

This course may include a "European Travel Seminar" sponsored by the University and conducted during the summer session.

420. CURRICULUM IMPROVEMENT 3 hours

Designed primarily for students who wish to work on individual and group problems growing out of their own school situations.

430. AUDIO-VISUAL AIDS IN EDUCATION 3 hours

A study of audio and visual materials and their uses in the promotion of the learning process.

440. PROBLEMS IN TEACHER EDUCATION 1-3 hours

This course provides for individual study, investigation, and research in the field of professional teacher education. Open to qualified seniors with approval of the department chairman.

BACHELOR OF SCIENCE IN ELEMENTARY EDUCATION

The course program as outlined below meets the requirements for the Bachelor of Science in Elementary Education and for the standard certificate in elementary education.

FOUR YEAR ELEMENTARY PROGRAM

(See also page 39 of this catalog)

FIRST YEAR

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Physical Education 101</td>
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</tr>
<tr>
<td></td>
<td>English Composition C-1</td>
<td>3</td>
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<tr>
<td></td>
<td>Western Civilization 111</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Biology 111 or Chemistry 105</td>
<td>4-3</td>
</tr>
<tr>
<td></td>
<td>Art 101</td>
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<td>Introduction to Education 121</td>
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</tr>
<tr>
<td></td>
<td>Math 111</td>
<td>3</td>
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<tr>
<td></td>
<td>Liberal Arts Orientation</td>
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<td></td>
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<p>| Winter   | Physical Education 102                      | (1)*  |
|          | English Composition C-2                     | 3     |
|          | Western Civilization 112                    | 3     |
|          | Biology 111 or Chemistry 105                | 4-3   |</p>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Art 102</td>
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<tr>
<td>Music 112</td>
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<tr>
<td>Math 112</td>
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**Spring**

<table>
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<tr>
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<tr>
<td>Physical Education 103</td>
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<td>English Composition C-3</td>
<td>3</td>
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<tr>
<td>Western Civilization 113</td>
<td>3</td>
</tr>
<tr>
<td>Plays &amp; Games 133</td>
<td>3</td>
</tr>
<tr>
<td>Art 103</td>
<td>2</td>
</tr>
<tr>
<td>Music 113</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Arithmetic 252</td>
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<td><strong>Total</strong></td>
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**SECOND YEAR**

**Fall**

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Physical Education 201</td>
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<tr>
<td>U. S. History 211 or Amer. Govt. 201</td>
<td>3</td>
</tr>
<tr>
<td>American Literature 211 or English Literature 201</td>
<td>3</td>
</tr>
<tr>
<td>Health Education 122</td>
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<tr>
<td>Children's Literature 233</td>
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<tr>
<td>Psychology 201</td>
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**Winter**

<table>
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<tr>
<th>Course</th>
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<tr>
<td>Physical Education 202</td>
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<tr>
<td>U. S. History 212 or Amer. Govt. 202</td>
<td>3</td>
</tr>
<tr>
<td>American Literature 212 or English Literature 202</td>
<td>3</td>
</tr>
<tr>
<td>Physics 205</td>
<td>3</td>
</tr>
<tr>
<td>Speech 260 or 271</td>
<td>3</td>
</tr>
<tr>
<td>Child Development 223</td>
<td>3</td>
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<td><strong>Total</strong></td>
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**Spring**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Physical Education 203</td>
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<tr>
<td>U. S. History 213 or Amer. Govt. 203</td>
<td>3</td>
</tr>
<tr>
<td>Science for Elementary Teacher 283</td>
<td>3</td>
</tr>
<tr>
<td>American Literature 213 or English Literature 203</td>
<td>3</td>
</tr>
<tr>
<td>Handcrafts for Teachers 210 or Arts &amp; Crafts 320</td>
<td>3</td>
</tr>
<tr>
<td>Descriptive Astronomy 250</td>
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</table>
THIRD YEAR

Fall
Teaching of Reading 241 3
Philosophy and/or Religion C-31 3
History of Ohio 303 3
Elementary School Curriculum 301 3
Elective 3

Winter
Philosophy and/or Religion C-32 3
The Culture of Early Man 331 3
Teaching Language Arts 312 3
Electives 6

Spring
Philosophy and/or Religion C-33 3
Teaching Social Studies 311 3
Educational Psychology 213 3
Electives 6

15

FOURTH YEAR

Fall
Observation 313 1
Psychology of the Exceptional Child 3
Evaluation & Measurement 360 3
Electives 8

Winter
Audio-Visual Aids 430 3
History and Philosophy of Education 401 3
Human Geography 400 or Global Geography 431 3
Electives 6

15

Spring
Student Teaching 380 or 9-15
Electives 6

15
A student must have a 2.0 accumulative average before taking student teaching.

Electives should largely be in liberal arts content courses outside the Department of Education in order to conform to the regulations on page ?? requiring at least 120 quarter hours of work outside the major department.

*(1)* Does not apply toward 180 required hours for graduation.

**TWO-YEAR ELEMENTARY CADET PROGRAM**

(See also page 39 of this catalog)

The course program as outlined below meets the requirements for the Two-Year Elementary Cadet Program and for the Provisional Cadet Elementary Certificate.

Continuing in the Cadet Program is contingent upon the maintenance of a 2.5 accumulative average.

**TWO-YEAR ELEMENTARY CADET PROGRAM**

**FIRST YEAR**

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Liberal Arts Orientation</td>
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<tr>
<td>Physical Education 101</td>
<td>(1)*</td>
</tr>
<tr>
<td>English Composition C-1</td>
<td>3</td>
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<tr>
<td>Western Civilization 111</td>
<td>3</td>
</tr>
<tr>
<td>Biology 111 or Chemistry 105</td>
<td>4.5</td>
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<tr>
<td>Art 101</td>
<td>2</td>
</tr>
<tr>
<td>Introduction to Education 121</td>
<td>2</td>
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<tr>
<td>Music 111</td>
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<td>Math 111</td>
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18 or 19

**Winter**

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<tr>
<td>Physical Education 102</td>
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<td>English Composition C-2</td>
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<td>Western Civilization 112</td>
<td>3</td>
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<tr>
<td>Biology 111 or Chemistry 105</td>
<td>4.5</td>
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<td>Art 102</td>
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<td>Music 112</td>
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<tr>
<td>Health Education 122</td>
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16 or 17
### Spring

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Physical Education 103</td>
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<td>English Composition C-3</td>
<td>3</td>
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<tr>
<td>Western Civilization 113</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Social Studies 311</td>
<td>3</td>
</tr>
<tr>
<td>Art 103</td>
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<tr>
<td>Plays &amp; Games 133</td>
<td>3</td>
</tr>
<tr>
<td>Music 113</td>
<td>2</td>
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<tr>
<td>Physics 205</td>
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### SECOND YEAR

#### Fall

<table>
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<th>Course</th>
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<tr>
<td>Physical Education 201</td>
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<tr>
<td>History and Philosophy of Education 401</td>
<td>3</td>
</tr>
<tr>
<td>Teaching of Reading 241</td>
<td>3</td>
</tr>
<tr>
<td>U. S. History 211 or Amer. Govt. 201</td>
<td>3</td>
</tr>
<tr>
<td>Teaching of Arithmetic 252</td>
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</tr>
<tr>
<td>Children's Literature 233</td>
<td>3</td>
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<tr>
<td>Speech 260 or 271</td>
<td>3</td>
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<td><strong>Total</strong></td>
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#### Winter

<table>
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<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Physical Education 202</td>
<td>(1)*</td>
</tr>
<tr>
<td>Elementary School Curriculum 301</td>
<td>3</td>
</tr>
<tr>
<td>Handwork for Teachers 210 or Arts &amp; Crafts 320</td>
<td>3</td>
</tr>
<tr>
<td>U. S. History 212 or Amer. Govt. 202</td>
<td>3</td>
</tr>
<tr>
<td>Child Development 223</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Language Arts 312</td>
<td>3</td>
</tr>
<tr>
<td>Science for Elementary Teacher 283</td>
<td>3</td>
</tr>
<tr>
<td>Observations 313</td>
<td>1</td>
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<tr>
<td><strong>Total</strong></td>
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#### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Student Teaching 380 or</td>
<td>9-15</td>
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<tr>
<td>Electives</td>
<td>6</td>
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<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

A student must have a 2.5 accumulative average before taking student teaching.

*(1) Does not apply toward 180 hours required for graduation.*
ELEMENTARY EDUCATION COURSE DESCRIPTION

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 for four year elementary students.

233. CHILDREN'S LITERATURE 3 hours
A study of the best of literature for 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.

241. TEACHING OF READING 3 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.

252. TEACHING ARITHMETIC 3 hours
Methods and principles underlying the teaching of arithmetic in the elementary grades; diagnosis and remedial work; preparation and evaluation of materials of instruction.
Prerequisite: Math 111 for cadets; Math 111 and 112 for four year elementary.

283. TEACHING OF 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 the use of materials in the teaching of Elementary Science.
Prerequisite: 10 hours in the Division of Natural Science.

301. THE ELEMENTARY SCHOOL CURRICULUM 3 hours
Designed to help students develop learning situations in the classroom that are in harmony with basic psychological principles of learning with special emphasis on the objectives of elementary education.

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.

311. TEACHING OF THE SOCIAL STUDIES IN THE ELEMENTARY FIELD 3 hours
Objectives, methods, modern tendencies and evaluation in History, Geography, Civics, and related fields, planning of experience units and materials of instruction. (Formerly 315)

312. TEACHING OF THE LANGUAGE ARTS 3 hours
Problems and methods of teaching oral and written expression, hand-
writing 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.  (Formerly 315)

313. OBSERVATIONS  
1 hour  
Designed to aid prospective elementary teachers in observing classroom situations as well as laboratory practice and evaluating learning conditions.

330. KINDERGARTEN METHODS AND MATERIALS  
3 hours  
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  
3 hours  
Study of programs and practices in the primary grades required of all students who are candidates for the Kindergarten-Primary Certificate.

380. STUDENT TEACHING IN THE ELEMENTARY GRADES  
9-15 hours  
The work consists of planning and teaching under supervision in the elementary grades. An integral part of Student Teaching is the seminar held on an average of once a week on the campus. Problems of mutual concern, procedures, acquaintanceship with pertinent literature and materials in the field comprise this phase of the program. The following prerequisites are required: (1) have a minimum scholarship rating of 2.0 quality points per scheduled hour for the Four-Year Elementary Program; (2) approved by the Director of Teacher Education.

SECONDARY EDUCATION

Students preparing to teach in secondary schools normally are expected to complete the requirements for a major in a subject-matter department in the College of Liberal Arts and have the endorsement of that department's chairman before they undertake student teaching.

The professional education requirements for students in the field of secondary education are listed below:

1. Required courses

121. INTRODUCTION TO EDUCATION  
(Required of all Education students)  
3 hours

370. SCHOOL AND SOCIETY  
3 hours

433. HUMAN GROWTH AND DEVELOPMENT  
(Prerequisite: Gen. Psychology 201)  
3 hours

390. HIGH SCHOOL CURRICULUM  
3 hours

350. METHODS OF TEACHING IN HIGH SCHOOL  
3 hours  
or SPECIAL METHODS OF TEACHING IN HIGH SCHOOL  
3 hours

480. STUDENT TEACHING  
9 hours  

23 hours
2. Two electives from the following courses:

213. EDUCATIONAL PSYCHOLOGY 3 hours
360. EVALUATION & MEASUREMENT 3 hours
401. HISTORY AND PHILOSOPHY OF EDUCATION 3 hours
402. SCHOOL ORGANIZATION & ADMINISTRATION 3 hours
410. NATIONAL SYSTEMS OF EDUCATION 3-6 hours
430. AUDIO-VISUAL AIDS 3 hours
440. SPECIAL PROBLEMS IN TEACHER EDUCATION 1-3 hours

TOTAL 29 hours

SECONDARY EDUCATION COURSE DESCRIPTION

350. Teaching Methods in the Secondary School 3 hours
An analysis of the methods, devices, and techniques which are most effective in directing learning in the various subject areas at the high school level. Emphasis upon cooperative learning, activities, understanding the student, the core curriculum, television in learning, instructional planning and other new developments in teaching practices. Observations and evaluations of actual classroom situations as well as laboratory practice within the class are included.

351. 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, transcription, bookkeeping and social business in the high school.

352. 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 selections of textbooks, visual materials and library references; extra-curricular programs; objective tests.

353. 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.

354. 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.

355. 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.

356. 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.

357. 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 extra-curricular programs, debate, dramatics and radio.

370. School and Society 3 hours
A study of schools in relation to their supporting society; the meaning of democracy in its relation to public schools; the responsibilities of educators to the community as well as to the school itself; the nature, type, and limitations of both the official and unofficial controls of the public school.

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

433. Human Growth and Development 3 hours
Required of secondary education majors. This is parallel to Education 223 which is required of majors in elementary education. A study of the social and developmental factors underlying high school instruction.
Prerequisite: Psychology 201.

450. Driver Education 3 hours
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 School 9 hours
To be eligible for student teaching the candidate must:
(1) have senior rank;
(2) have a minimum scholarship rating of 2.0 quality points per scheduled hour;
(3) have completed or in the process of completing the following courses, preferably in order of the following listing:
   a. Introduction to Education
   b. School and Society
   c. Human Growth and Development
d. High School Curriculum
   e. Special Methods or High School Methods

(4) teach either in his major or minor subject field;
(5) be approved by the Director of Teacher Education and by the
chairman of his major department.

The work consists of planning and teaching under supervision in the
junior or senior high school, two hours of teaching daily plus an average of
one hour per week conference with the supervisor on campus is required.
A certain amount of classroom observation as determined by the department
supervisor is necessary.

ENGLISH, SPEECH, AND THEATRE

PROFESSOR SPOTTS (Chairman)
ASSOCIATE PROFESSOR PRICE
ASSOCIATE PROFESSOR BARTLETT
ASSOCIATE PROFESSOR HASTINGS
ASSISTANT PROFESSOR BENNETT, ASSISTANT PROFESSOR HIGGINS
ASSISTANT PROFESSOR CRAWFORD
ASSISTANT PROFESSOR GERDES, ASSISTANT PROFESSOR SPELLMAN
MR. KELLEHER, MR. BELCH

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 partici-
pate 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 con-
centration 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), Literature and Writing (131-2-3), Basic Speech (S-1, 2, 3), and Theatre Workshop (280) 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 (major) in English the following courses are required: English 211, 212, 213, American Literature; English 201, 202, 203, English Literature; Speech 262, Oral Interpretation; Theatre 283, Acting Fundamentals; English 322, Chaucer; English 351, Language Study; Shakespeare, 3 hours; English 340, Creative Writing, 3 hours, or English 350, Advanced Composition, 3 hours, or Journalism, 3 hours. Additional courses from the Language and Literature classifications must be selected to complete a minimum of forty-eight hours. Two years of a modern foreign language and one year of English History are also 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 (Language Study); Speech 371 (Debate); Speech 372 (Advanced Public Speaking); and Speech 373 (Discussion). 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 classification. In addition to the forty-five hours within the department, two years of a modern foreign language are required.

**Theatre:** For a field of concentration in Theatre, the following courses are required: Theatre 291, 292, 293 (Introduction to Theatre, Theatre History); Theatre 381, 382, 383 (Theatre Techniques); and Theatre 481, 482, 483 (Play Production). Additional courses must be selected from the departmental offerings to complete forty-five hours in Theatre and Speech; of these forty-five hours, at least twenty-seven must be in Theatre (the remaining eighteen hours may be in either Theatre or Speech). In addition to the forty-five hours of the concentration, nine hours of dramatic literature beyond the liberal arts general literature requirement and two years of a modern foreign language are required.

**ENGLISH COURSES**

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 or their equivalent are required for graduation, except as follows: On recommendation of his instructor and approval of the department chairman, a
student with a grade of A in English C-1 may substitute three hours of Creative Writing (English 340), Advanced Composition (English 350), or Literature and Writing (English 131-2-3) for English C-2.

131, 132, 133. LITERATURE AND WRITING 9 hours
In this course the primary emphasis is on literature; secondary emphasis is on writing based on or growing out of the reading. Attention is also given to the principles of style and the fundamentals of grammar and mechanics, the nature and amount depending on the needs of the individual student and of the class as a whole. Entering freshmen scoring high on a placement test are assigned to this course instead of to English C-1-2-3. On recommendation of the dean of the college, other students whose test scores qualify them may also be placed in this course. Credit hours in English 131-2-3 count toward the university requirement of nine hours of freshman English.

201, 202, 203. INTRODUCTION TO ENGLISH LITERATURE 9 hours
In these three quarters some of the principal works of the major English writers are studied. English 201, 202, 203 are required for a concentration in English.

211, 212, 213. AMERICAN LITERATURE 9 hours
In these three quarters some of the principal works of the major American writers are studied. English 211, 212, 213 are required for concentration in English.

241-242-243. JOURNALISM 9 hours
This is a practical course providing basic instruction in newspaper organization, procedures, and techniques. Students work closely with or are members of the staff of the Northern Review. Credit is three hours per quarter for students who participate in the laboratory held on alternate Sunday afternoons at the printer's, two hours for those who do not.

253. VOCABULARY STUDY 2 hours
This course, which meets three hours per week and is open to all students (freshman through senior rank) without prerequisite, 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.

PREREQUISITES FOR ADVANCED LITERATURE COURSES

Nine hours of Introduction to English literature (English 201-2-3) and/or American Literature (English 211-2-3) or consent of the Instructor are required for admission to any 300-400 level literature course. In all sequential courses (as shown by hyphens joining the course numbers) each quarter is the prerequisite for the following quarter.

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. At least one quarter is 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.

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 during the year to more mature types, with emphasis in the third quarter on plays in the more complex tragic mode. Most of the plays studied are from the modern theatre. All three quarters are required for a concentration in Speech.

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—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. ADVANCED COMPOSITION  
3 hours
The emphasis in this course is on clear, effective expository writing with particular attention to content and style. The student's mastery of the fundamentals of English grammar and mechanics is assumed (a quality-point average of at least 2.3 in freshman English is recommended).
Enrollment is limited and admission is only with approval of the Instructor. A maximum of nine hours of credit is permitted.

**351-352. LANGUAGE STUDY** 6 hours

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

**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).

**411, 412, 413. ADVANCED AMERICAN LITERATURE** 9 hours

The major works of the principal American writers from the Colonial period to the present are studied, with attention also to literary movements and the cultural and historical backgrounds of these works. Emphasis is on Emerson, Thoreau, Hawthorne, Poe, Melville, Whitman, Twain, Dickinson, and James, as well as several of the best-known figures of recent years, such as O'Neill, Hemingway, and Frost.

**421. RESTORATION AND EIGHTEENTH CENTURY** 3 hours

The major works of several of the British writers of the neo-classical period, 1660-1800, are studied intensively, with particular emphasis on Dryden, Swift, Addison and Steele, Pope, and Johnson and Boswell.

**422. THE ROMANTIC PERIOD** 3 hours

Some works of the leading poets and prose writers of the Romantic Period are studied.

**423. MODERN POETRY** 3 hours

The works of the major twentieth-century poets writing in English are studied.

**433. THE VICTORIAN PERIOD** 3 hours

The works of Tennyson, Browning and other writers of the Victorian Period are studied.

**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

160. 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 RE-EDUCATION  3 hours
A course 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. VOICE AND DICTIO  3 hours

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

271, 272, 273. PUBLIC SPEAKING  9 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.
Prerequisites: Speech 271 or the equivalent for 272; Speech 272 or the equivalent for 273.

360. 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.

371. DEBATE  3 hours

372. ADVANCED PUBLIC SPEAKING  3 hours

373. 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

280. THEATRE WORKSHOP  1 hour
The work of the sequence is directly related to the production schedule of the Northern Players and Theta Alpha Phi. A maximum of six hours of credit is permitted.

283. ACTING FUNDAMENTALS  3 hours
This course is designed to follow the two vocal expression courses, Speech 261 (Voice and Diction) and Speech 262 (Oral Interpretation), with the addition of physical expression through movement and gesture. The basic theories and techniques of acting and makeup also are explored, with emphasis upon individual growth.

Prerequisite: Speech 261 and 262 or consent of the Instructor.

290. RADIO WORKSHOP  1 hour
The work of the sequence is directly related to the current University radio and television programs. A maximum of six hours of credit is permitted.

291. INTRODUCTION TO THEATRE  3 hours
An audience centered survey of theatrical theories and techniques designed to aid the student in establishing high standards of judgment and criticism in all aspects of production in the three primary dramatic mediums (theatre, cinema, television). Each aspect of the theatre experience will be analyzed with more complete enjoyment and appreciation through better understanding as the primary goal. Theatre 291 is required for a concentration in Theatre. (This course counts toward the Liberal Arts requirement of two quarters in Art, Music, and Theatre).

292, 293. THEATRE HISTORY  6 hours
A history of the Theatre from its beginnings in primitive man to the present. Primary emphasis will be on the development of the physical theatre, with secondary emphasis on the plays evolving from each period. The first term will cover the periods from the beginnings to the eighteenth century, the second term from the eighteenth century to the present, with attention also to the oriental theatre. Each term is a self-contained unit, though both are recommended if full value is to be acquired. Theatre 292 and 293 are required for a concentration in Theatre.

381, 382, 383. THEATRE TECHNIQUES  9 hours
The first unit presents the basic considerations for good directing; the second unit is devoted to stagecraft; the third unit presents the fundamentals of design. Theatre 381, 382, and 383 are required for a concentration in Theatre.

Prerequisite: Theatre 381 or consent of the Instructor for 382; Theatre 382 or consent of the Instructor for 383.
391. ADVANCED DICTION AND DIALECTS 3 hours
This course is designed to develop a high standard of competence in the use of the spoken English language and to develop the necessary vocal flexibility for dialect, verse, and period drama.
Prerequisites: Theatre 283 or consent of the Instructor.

392. CHARACTERIZATION DEVELOPMENT 3 hours
This course presents a detailed study of the theory of acting. Emphasis is upon the development of depth and insight into individual characterizations chosen from the world’s great dramatic literature.
Prerequisites: Theatre 391 or consent of the Instructor.

393. STYLES AND PERIODS 3 hours
This course comprises a thorough study of style and period in acting. Emphasis is on ensemble performance.
Prerequisites: Theatre 392 or consent of the Instructor.

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 department 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 advanced work in the theories and techniques of directing; unit three develops the many facets of duties and responsibilities of the producer-director. Theatre 481, 482, and 483 are required for a concentration in Theatre.
Prerequisites: Theatre 381, 382, and 383 or the equivalent for 481; Theatre 481 for 482; Theatre 482 for 483.

490. THEATRE PROJECTS 1-9 hours
The purpose of a theatre project is to give advanced training in an area of special interest or need to senior students concentrating in Theatre. The five areas and their prerequisites are as follows:

1. Design; prerequisite: Theatre 381-2-3 or the equivalent.
2. Directing; prerequisite: Theatre 381-2-3 or the equivalent.
3. Acting; prerequisite: Speech 261-2 and Theatre 283 or the equivalent.
4. History and/or Criticism; prerequisite: Theatre 291-2-3 or English 331-2-3 or the equivalent.
5. Playwriting; prerequisite: Theatre 291 or the equivalent.
Permission of the Instructor must be obtained for any project. The choice of area, scope of project, and credit to be earned will be determined in conference with the Director of Theatre. The student must have demonstrated to the satisfaction of the Director of Theatre, through participation in the theatre program, his ability to complete the proposed project. Upperclassmen who are not concentrating in Theatre but who meet the prerequisites may elect a project by obtaining permission of the department chairman and the Director of Theatre.

A maximum of nine quarter hours is permitted, with not more than six hours in any one quarter.

FOREIGN LANGUAGES

PROFESSOR SCHMITZ (Chairman), ASSISTANT PROFESSOR GMINDER,
MR. LOVELL, MRS. SHILLING, ASSISTANT

The ultimate educational value of knowing foreign languages and literature is that it helps the student to cultivate a greater breadth and comprehensiveness of thought, to arrive at a more thorough understanding 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, Italian, and Russian are designed to meet both practical and cultural needs, promoting proficiency in understanding, speaking, reading and writing the foreign language. Emphasis is placed on a comprehension of the spoken language and the development of a speaking knowledge. All courses are conducted for the most part in the foreign language, and 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 department considers a thorough mastery of the language as the indispensable basis for an objective, intelligent, and significant understanding and interpretation of literature.

The Thomas R. Schoonover Laboratory (with master-tapes, pre-recorded tapes and discs) provides opportunities for practice with tape recorders in 24 semi-soundproof booths, and extends the contact of the student with a LIVING language, aiming at a maximum of active participation; offering recorded materials which have been carefully prepared as an adjunct to class work, interrelated and coordinated with class instruction; rendering ample opportunity for aural comprehension, auditory-visual drill, speaking, simultaneous and consecutive interpreting, and self-correction.

Elementary and intermediate courses in French, German, Spanish, Italian, and Russian may be counted as Upper Division courses if taken during the junior or senior year. Courses conducted entirely in English cannot be counted toward the major.
Students with two years of high school preparation in a foreign language should begin with an intermediate course; those with more than two years should take a placement examination, and may be permitted to take a 300 level course, if approved by the head of the foreign language department.

Requirements for a major in a foreign language:
Prerequisite: Course 101-102-103 or two units of high school instruction in a foreign language.
Major: 45 hours.
For students desiring to take a field of concentration in either French, German, or Spanish, the following courses are required:

**French:**
201-202-203; 301-302-303; 311-312-313; 401-402-403.

**German:**
201-202-203; or 221-222-223; 301-302-303; 311-312-313; 401-402-403.

**Spanish:**
201-202-203; 301-302-303; 311-312-313
or 321-322-323; 401-402-403.

**FRENCH**

101-102-103. ELEMENTARY FRENCH 4 hours
The aim is to develop the ability to understand, speak, read, and write French. Stress on functional, rather than formal grammar. Special emphasis on early and fluent speaking. Elementary reading based on French life, customs and manners. Three hours of class and two scheduled laboratory practices a week.

201-202-203. INTERMEDIATE FRENCH 4 hours
A systematic review of fundamentals of grammar and pronunciation. Abundant conversational practice and composition based on short stories, plays and poetry. Occasional lectures on French life, history, architecture, art and civilization. Regular use made of film strips, slides and motion pic-
tures with French sound tracks. Three class periods and two scheduled laboratory practices a week.

Prerequisite: 101-103, or two years of high school instruction in French.

301, 302, 303. ADVANCED FRENCH CONSERVATION AND COMPOSITION 4 hours

Based on a wide range of topics dealing with France and the French-speaking peoples. The aim is to develop both a useful command of the language and an appreciation of French civilization. Recorded conversational dialogues on a variety of topics useful to the student or traveler in France, films and slides, and current French periodicals are used and discussed. Three class periods and two hours of scheduled laboratory.

Prerequisite: 201-203.

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

A study of the main currents and characteristic monuments of French literature. Class discussions based on the reading of representative French masterpieces. Lectures and reports.

Prerequisite: French 201-203, 301-303.

401-402-403. CIVILIZATION FRANCAISE 3 hours

A survey of the history of France, its topography, industries, government, educational system, journalism, etc.

The course, given entirely in French, is required of all French majors.

440. FRENCH SEMINAR 3 hours

For seniors majoring in French. May be repeated up to 6 hours.

GERMAN

101-102-103. ELEMENTARY GERMAN 4 hours

The aim is to develop the ability to understand, speak, read, and write German. Stress on functional, rather than formal grammar. Special emphasis on early and fluent speaking. Elementary reading based on German life, customs, and manners. Three class hours and two periods of scheduled laboratory practice a week.

201-202-203. INTERMEDIATE GERMAN 4 hours

A systematic review of the fundamentals of grammar, pronunciation, vocabulary and idioms. Abundant conversational practice and composition based on short stories, plays, poetry, and easy scientific material. Occasional lectures on German life, history, civilization, art, music, etc., illustrated with slides, film strips and motion pictures with German sound tracks. Three class periods and two hours of scheduled laboratory practice a week.

Prerequisite: German 101-103 or two years of high school instruction in German.

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; 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. German technical magazines and books are used.

**Prerequisite:** German 101-103, or two years of high school instruction in German.

301, 302, 303. **GERMAN CONSERVATION AND COMPOSITION** 4 hours

Based on a wide range of topics dealing with Germany. The aim is to develop both a useful command of the German language and an appreciation of German civilization. Recorded conversational dialogues on a variety of topics useful to the student or traveler in Germany, Austria, and Switzerland, films and slides, and current German periodicals are used. **Three class periods and two hours of scheduled laboratory practice a week.**

**Prerequisite:** German 101-103, 201-203, or 221-223.

311, 312, 313. **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 201-203, 301-303.

341-342-343. **HISTORY OF GERMAN CIVILIZATION** 3 hours

A survey of the main contribution to Western civilization as represented by characteristic periods and movements. The English lectures, illustrated by slides, film strips, 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.

Conducted in English. Open to all students, except freshmen.

401, 402, 403. **DEUTSCHE KULTURGESCHICHTCHE** 3 hours

The course, given entirely in German, is similar in content of German 341-343 (History of German Civilization), and is required of all German majors.

**Prerequisite:** German 201-203, 301-303, 331-333.

440. **GERMAN SEMINAR** 3 hours

For seniors majoring in German. May be repeated up to 6 hours.

**SPANISH**

101-102-103. **ELEMENTARY SPANISH** 4 hours

The aim is to develop the ability to understand, speak, read, and write Spanish. Stress on functional, rather than formal grammar. Special emphasis on early and fluent speaking. Elementary reading based on Spanish life, customs and manners, using materials dealing with Spain, Mexico and South America. **Three class periods and two scheduled laboratory practices.**
201-202-203. **Intermediate Spanish** 4 hours
A systematic review of the fundamentals of grammar and pronunciation. Abundant conversational practice and composition based on short stories, plays and poetry. Occasional lectures in Spanish on Spanish life, history, architecture, art and civilization. Regular use made of film strips, slides and motion pictures with Spanish sound tracks. **Three class periods and two scheduled laboratory practices.**
Prerequisite: Spanish 101-103, or two years of high school instruction in Spanish.

301, 302, 303. **Spanish Conservation and Composition** 4 hours
Based on a wide range of topics dealing with Spain and the Spanish-speaking world. The aim is to develop both a useful command of the language and an appreciation of Spanish civilization. Recorded conversational dialogues on a variety of topics useful to the student or traveler in Spain, Mexico and Latin America, films, slides, and current periodicals are used and discussed. A study of commercial Spanish, and practice in correspondence, especially useful to students in the Department of Economics and Business Administration. **Three class periods and two hours of scheduled laboratory practice.**
Prerequisite: Spanish 201-203, 301-303.

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. Discussions, readings and reports.
Prerequisite: Spanish 201-203, 301-303.

321-322-323. **Spanish American Literature** 3 hours
Main currents of Spanish-American literature with relation to their European background.
Prerequisite: Spanish 201-203.

401, 402, 403. **Civilización Hispanica** 3 hours
This course, given entirely in Spanish, presents an integrated picture of the political, economic, social, geographical and cultural forces which have shaped Spain and Hispanic America, and is required of all Spanish majors.
Prerequisites: Speech 301-302-303, and 311-312-313, or 321-322-323.

440. **Spanish Seminar** 3 hours
For seniors majoring in Spanish. May be repeated up to 6 hours.

**RUSSIAN**

101-102-103. **Elementary Russian** 4 hours
Ear training leading to instantaneous aural comprehension. Oral structural drill in basic grammatical patterns. Elementary reading based on drill in basic grammatical patterns. Elementary reading based on Russian life,
customs and manners. Simple conversation based on practical, every-day situations. *Three class periods and two hours of scheduled laboratory practice a week.*

201-202-203. **INTERMEDIATE RUSSIAN**

4 hours

Oral grammatical review, and conversational practice. Advanced reading (short stories, plays, Russian history and easy science material). Occasional lectures on Russian life, history, art and civilization. Regular use made of film strips, slides and motion pictures. *Three class periods and two hours of scheduled laboratory practice a week.*

**Prerequisite:** Russian 101-103.

221-222-223. **SCIENTIFIC RUSSIAN**

3 hours

The objective is to enable the student to use Russian in professional or graduate work. The technique of reading advanced Russian and its application; 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. Russian technical periodicals and books are used.

**Prerequisite:** Russian 101-103.

440. **PROBLEMS IN RUSSIAN**

3 hours

Research or special projects for seniors prepared to do special work in Russian. May be repeated up to 6 hours.

**CLASSICAL GREEK**

101-102-103. **FIRST YEAR GREEK**

3 hours

The aim of this course is to develop the ability to read, understand, and translate classical Greek through an adequate grasp of the structure of this highly inflected language. Selected readings from Greek prose writers.

201-202-203. **SECOND YEAR GREEK**

3 hours

The objective is to develop the student's skill in interpreting Greek prose and poetry from the classical period. Further elaboration of points of grammar and syntax arising from the reading material. Occasional lectures on Greek civilization illustrated with slides.

**LATIN**

101-102-103. **ELEMENTARY LATIN**

3 hours

The course is designed for those students 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:** Latin 101-103, or two units of high school Latin.
HISTORY AND POLITICAL SCIENCE

PROFESSOR HILLIARD (Chairman), PROFESSOR BINKLEY,
PROFESSOR DARLINGTON, PROFESSOR MILNAR,
ASSISTANT PROFESSOR SABOL, ASSISTANT PROFESSOR SOBERS,

The History Courses stress the evolution of human institutions with a view to developing an informed appreciation of past centuries as well as 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; 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 Medieval background, the Renaissance, the rise of international rivalry, the World Wars and their aftermath. Open to Freshmen.

211. HISTORY OF THE UNITED STATES TO 1850 3 hours
212. HISTORY OF THE UNITED STATES TO 1900 3 hours
213. HISTORY OF THE UNITED STATES: 1900 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. Open to freshmen.

303. HISTORY OF OHIO 3 hours
The political and cultural evolution of the state from prehistoric times to the present.
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.

324. **Renaissance** 3 hours
The political evolution of the Italian communes into city republics, with emphasis on Florence, Milan, Genoa and Rome; early capitalism and industrial and commercial movements; an analysis of the culture, art, science, and literature of the period and their influence upon the Church, the Papacy, and modern modes of thought and behavior.

325. **Reformation** 3 hours
The Church and European society in the later Middle Ages; culture and thought in the age of the Reformation; the rise of the European state system; Luther and the beginning of the Reformation; Zwingli and Switzerland; Calvin; the expansion of Protestantism in Europe; the Counter Reformation; and the relation of the Reformation to medieval and modern civilization.

327. **Revolutionary Era** 3 hours
A study of the period of the French Revolution and Napoleon, with emphasis on the philosophical background and ideological development of the period, together with their effect on later history.

331-332. **Constitutional History of the United States** 6 hours
A survey of the constitutional development of the United States from the colonial period to the present time.

**Prerequisite:** Political Science 201, 202, 203, and History 211, 212, 213.

341-342. **American Foreign Relations** 6 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.

**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.

344. **History of the Modern Middle East** 3 hours
A study of the social, political, and economic evolution of Turkey, Iran, and the Arab World from 1800 to the present.

351-352. **Ancient History** 6 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.

353-354. LATIN AMERICA  6 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  6 hours
An investigation and intensive study of some of the major movements of United States history since 1900.
Prerequisite: History 211, 212, 213.

371-372-373. RECENT EUROPEAN HISTORY  9 hours
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: History 111, 112, 113.

381. THE WESTWARD MOVEMENT IN THE UNITED STATES  3 hours
Territorial expansion from colonial times to the present. Emphasis is placed on Indian relations, land policies, transportation and trade.

382. THE WESTWARD MOVEMENT IN THE UNITED STATES  3 hours
A continuation of the first course; the advance of the frontier. The development of sectionalism; the influence of the West on American ideals and institutions. Emphasis is placed on the Trans-Mississippi West.
Prerequisite: History 211, 212, 213 or consent of the instructor.

411, 412, 413. RUSSIAN HISTORY  9 hours
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.

440. HISTORY PROBLEMS  3 hours
Individual investigation on a specific problem. Open to qualified seniors majoring in History.

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.

312. MUNICIPAL GOVERNMENT 3 hours
A study of the principal problems of municipal government in the United States.
Prerequisite: Political Science 201, 202, 203.

331-332. COMPARATIVE GOVERNMENT 6 hours
A study of the governments of England, France, Germany, and Russia.
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.
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.
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 national, state and local government in the United States.
Prerequisite: Political Science, 201, 202, and 203 or the consent of the Instructor.

371-372. INTERNATIONAL RELATIONS 6 hours
A study of the forces which determine the foreign policies of the major world powers. An introduction to diplomatic procedures; the sources of power; the organization and functions of the United Nations.

373. CONTEMPORARY INTERNATIONAL PROBLEMS 3 hours
An analysis of contemporary problems with a view to methods of pacific settlement. The Department of State problem method is used.

383. EUROPEAN POLITICAL THEORIES 3 hours
A survey of the development of political philosophy from the period of Ancient Greece to modern times.
Prerequisite: Political Science 201, 202, 203, or the consent of the Instructor.
391. SOCIAL FORCES IN AMERICAN GOVERNMENT
   An investigation of the part played by interest and pressure groups and
   ideologies in the determination and execution of public policies.

392. 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.

392. FOREIGN POLICY OF THE SOVIET UNION
   The constant factors in Russian foreign policy. Policy of the early years
   as affected by Marxian ideology, internal condition and foreign interference.
   Period of truce and limited cooperation with Western Powers. Second World
   War and aftermath.

393. SOVIET SOCIAL AND ECONOMIC INSTITUTIONS
   A comparative study of the Soviet economic structure and legislation; gen-
   eral principles of private law, including family law; industrial and trade
   relations; labor law; and collective farms.

450. POLITICAL SCIENCE PROBLEMS
   Individual investigation in the field of political science. Open to qualified
   seniors majoring in this department.

INDUSTRIAL ARTS

ASSISTANT PROFESSOR KAIN (Chairman), MR. BOWLING

The courses constituting the Industrial Arts curriculum are organized
(1) to provide a diversified program for students who desire to teach in-
dustral and technical subjects in the public schools and who may later wish
to continue their specialization through advanced study in graduate school;
(2) to offer technical information and practical laboratory experiences to
persons interested in preparing for supervisory positions and industrial voca-
tions; (3) to give engineering students an understanding of typical industrial
processes and their application; and (4) to assist in the preparation of teach-
ers in elementary and secondary education by providing functional activities
in craftwork through the utilization of simple tools and inexpensive
materials.

Students concentrating in Industrial Arts are required to complete a mini-
imum of 83 quarter hours of courses in the areas of drawing, woodworking,
metalworking, graphic arts and printing, electricity-electronics, ceramics, and
automotives. Four years of study in these areas and in the areas of general
and professional education qualify the student for the Provisional Special
Certificate required for teacher certification.
Prospective teachers who do not wish to specialize in Industrial Arts as a major teaching field but desire to obtain experience sufficient to teach courses on a minor basis, are required to complete a minimum of 45 quarter hours in the previously mentioned areas. Fulfillment of these requirements and the requirements in the field of concentration leads to qualification for the Provisional Teaching Certificate.

**BASIC INDUSTRIAL ARTS CURRICULUM FOR MAJORS**

<table>
<thead>
<tr>
<th></th>
<th>FALL</th>
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<tr>
<td></td>
<td>English C-1</td>
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|          | SOPHOMORE YEAR                 |          |          |                                |          |          |                                |
|          | Literature 211 or 201          | 3        |          | Literature 212 or 202          |          |          | Literature 213 or 203          | 3        |
|          | American Gov't 201             | 3        |          | American Gov't 202             |          |          | American Gov't 203             | 3        |
|          | Finishing 241                  | 3        |          | Arts and Crafts 200            |          |          | Metal Casting 213              | 3        |
|          | Furniture Constr. 231          | 3        |          | Intro. to Art 200              |          |          | Study of Music 200             | 3        |
|          | Chemistry 111 or 221*          | 4        |          | Chemistry 112 or 222*          |          |          | Chemistry 113 or 223*          | 4        |
|          | Physical Education             | 1        |          | Physical Education             | 1        |          | Physical Education             | 1        |
|          | **Total**                      | **17**   |          | **Total**                       | **17**   |          | **Total**                       | **17**   |

|          | JUNIOR YEAR                    |          |          |                                |          |          |                                |
|          | Metalwork Technol. 321         | 5        |          | Metal Machining 332            | 5        |          | Welding 343                    | 5        |
|          | Philosophy C-31                | 3        |          | Uphilosophy C-32               |          |          | Philosophy C-33                | 3        |
|          | Graphic Arts 311               | 3        |          | Printing 322                   | 3        |          | High Sch. Curri. 390           | 3        |
|          | Gen. Psychology 201            | 5        |          | Ceramics 221                   | 3        |          | Speech 271                     | 3        |
|          |                                 |          |          | Intro. to Education 121        | 2        |          | School & Society 370           | 3        |
|          | **Total**                      | **16**   |          | **Total**                       | **16**   |          | **Total**                       | **17**   |
SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Auto-Power Mech. 451</td>
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<tr>
<td>Mat’ls-Processes 460</td>
<td>5</td>
</tr>
<tr>
<td>Photography 430</td>
<td>3</td>
</tr>
<tr>
<td>Human Growth-Dev. 433</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
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<tr>
<td>Elec.-Electronics 402</td>
<td>5</td>
</tr>
<tr>
<td>Laboratory Plan. 412</td>
<td>3</td>
</tr>
<tr>
<td>Audio-Visual Aids 430</td>
<td>3</td>
</tr>
<tr>
<td>Eval.-Measurement 360</td>
<td>3</td>
</tr>
<tr>
<td>Ceramics 222</td>
<td>3</td>
</tr>
<tr>
<td>Ind. Arts Methods 423</td>
<td>5</td>
</tr>
<tr>
<td>Student Teaching 480</td>
<td>9</td>
</tr>
<tr>
<td>Special Problems 440 or Elective</td>
<td>3</td>
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</tbody>
</table>

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*A sequence of Chemistry 105, Biology 112, and Physics 210 may be substituted for the second year of natural science.

101. INDUSTRIAL ARTS ORIENTATION

An introduction to Industrial Arts, presenting a basic coverage of the philosophical origins and contemporary practices. The functions of Industrial Arts and insights into the profession are exemplified through public school visitations and visiting speakers. The fundamental procedures, operations, and the special equipment for each of the several areas of Industrial Arts are briefly explored through laboratory activities.

111. DRAWING I

Use of instruments, applied geometry, lettering, orthographic projection, and pictorial drawing. This course is offered in the College of Engineering.

112. DRAWING II

Continuation of 111 Drawing. Developments, intersection, and working drawings. Projects in the main fields of engineering are used. This course is offered in the College of Engineering.

Prerequisite: 111 Drawing.

113. DRAWING

The major purpose of this course is to create an awareness of the value of good design as it is applied to fabrication and construction, using typical industrial materials. Through selected exercises the question of design (as applied to a particular function and material) becomes personal to the extent that it demands a response of thinking and feeling on the part of the individual. Efforts are made to bring the student into close relationship with good design as it exists in textiles, furniture, sculpture, graphics, paintings, interiors and architecture, in addition to its application to the manufacture of industrial products.

Prerequisite: Drawing 111 or special permission of the department chairman.

112. WOOD TECHNOLOGY

This is the first in a series of three courses devoted to woodworking. An
investigation is made of the nature of wood, its qualities, and its present
day applications in many forms. Forestry, lumbering, grading, preserving,
and the utilization of wood products and by-products are emphasized.
Laboratory experiences include the identification of common commercial
lumbers, determining moisture content, strength analysis, control of shrinkage,
methods of preservation and beautification. Wood fabrication and joining
techniques are employed in the construction of related projects.

123. CARPENTRY AND WOOD STRUCTURES

In this course a practical approach is made to the utilization of efficient
construction practices in the building of modern wood structures. Structural
types, materials, plans, specifications, and construction procedures are studied.
Through the use of carpentry tools and power equipment various applications
are made in the fabrication of structural elements.

Prerequisite: 111 Drawing, 101 Industrial Arts, 112 Wood Technology.

200. ARTS AND CRAFTS

Laboratory experiences in working with a large selection of craft mate-
rials: copper, brass, aluminum, wood, plastics, leather, gemstones, textiles,
reed, and others. The essentials of design and ornamentation are considered
as they are applicable to the material. Primary emphasis is given to handi-
craft techniques and the tools and procedures involved.

210. HANDICRAFTS FOR TEACHERS

The primary purpose of this course is to introduce prospective teachers,
both elementary and secondary, to the basic hand tools and their proper
manipulation in simple constructional activities. Exemplary projects are cho-
sen to meet typical units of study, their construction utilizing available and
inexpensive materials.

E-211. PATTERNMAKING AND FOUNDRY

A study of molding and casting principles, including mold types, molding
machinery, foundry equipment, patterns—their types and requirements,
quality control. Laboratory work includes the making of simple and seg-
mented patterns, ramming of molds, pouring castings, and cleaning-finishing
operations. Enrollment in this course is limited to sophomore engineering
students.

E-212. SHEET METAL AND WELDING

A study of the common sheet metals, their manufacture and characteristics.
Working qualities of sheet metals. Sheet metal layouts and developments.
Shaping of sheet metals by hand and machine processes. Methods of joining
sheet metals: seams, joints, soldering, riveting; welding processes. Enrollment
in this course is limited to sophomore engineering students.

E-213. METAL MACHINING

This course serves to acquaint the prospective engineer with the principles
and practices of metal machining as applied to processing and production.
The course is comprised of two facets: The first, embodied through lectures and classroom presentations, explains reasons for the procedures, methods, tools and machines utilized by industry. The second, carried out in the machine tool laboratory, adapts these principles to actual machining practices—including methods, operations, tool selections, and other elements associated with process planning. Enrollment in this course is limited to sophomore engineering students.

213. **Metal Casting** 3 hours

221, 222. **Ceramics** 6 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. Offered in the Department of Art.

231. **Furniture and Cabinet Construction** 3 hours
Particular emphasis is placed upon advanced cabinetry procedures through the study of traditional and contemporary period designs. Hand and machine-tool techniques are employed in joinery and decorative treatments which feature carving, turning, veneering, inlaying, fluting, and associated styling elements. At least one major project is required for the completion of this course.

*Prerequisite: 113 Drawing, 101 Industrial Arts, 112 Wood Technology.*

241. **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.

311. **Graphic Arts** 3 hours
An introductory course in the manipulative processes of duplicating written communications. Practical experiences in process printing, mimeographing, spirit duplicating, photographics, blueprinting, block printing, etching, letterpress and offset printing.

321. **Metalwork Technology** 5 hours
Fundamentals of general metalwork. The course provides practice in layout and pattern drafting, bending, forming, seaming, soldering, resistance and oxyacetylene welding and machining. Minor problems in wrought iron work. Construction of fixtures, tools, ornaments, and furniture.

322. **Printing** 3 hours
An historical study of printing with typical exercises in composition, typ-
ography, imposition, principles of display, platen press, cylinder press operation, and offset press operations.

Prerequisite: 331 Graphic Arts or permission of the department chairman.

323-324. Lapidary and Jewelry
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.

332. Metal Machining
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: Metalwork Technology 321.

343. Welding Theory and Practice
Welding theory, and weld types. Welding metallurgy. Experiences in electrical resistance and arc welding, oxacetylene welding, brazing, and burning. Welded metal fabrications.

411. Fundamentals of Electricity & Electronics
A study of the principles of electricity: magnetism, current, Ohm’s Law, circuitry, heating effects, and power. Practical calculations and the application of principles to laboratory experiments and to the construction of a variety of electrical devices. An introduction to the field of electronics. Study and experimentation with vacuum tubes, rectifiers, power supplies, amplifiers, oscillators, transmitters, and receivers. Basic lessons in International Morse Code and amateur radio operating techniques and procedures.

Prerequisite: Math. 111-112.

412. Laboratory Planning and Equipment Selection
The architectural features, selection, arrangement, and maintenance of equipment of the modern Industrial Arts laboratory. The drawing of floor plans and writing of specifications.

Prerequisite: Same as 323 Industrial Arts Organization and Methods.

423. Industrial Arts Organization and Methods
A professional course in the methods of teaching Industrial Arts, featuring the determination of objectives, preparing lesson plans, organizing courses, laboratory procedures, instructional materials, and administrative practices. Visitations are made to representative high school laboratories. Open only to students having 30 hours or more of Industrial Arts courses.

430. Photography
A course designed to present proper picture taking techniques through the study of photographic composition, camera types and accessories, photographic optics, and laboratory methods and materials. Dark room practices
in developing and printing negatives are featured in this course.

440. SPECIAL PROBLEMS IN INDUSTRIAL ARTS 1 - 3 hours
Industrial Arts students of junior or senior standing are given special professional assignments dealing with problems not fully explored in the methods courses. Problems in course organization, curriculum content, laboratory equipment maintenance and repair, investigation of research materials, and planned observations are featured on an individual basis.

Time for the course is arranged by permission of the department chairman any quarter.

451. AUTOMOTIVES & POWER MECHANICS 5 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.

460. INDUSTRIAL MATERIALS AND PROCESSES 5 hours
The aim of this course is to present a study of industrial materials, their origins, sources, characteristics, uses, and the manufacturing processes involved in industrial production. Classroom discussions, technical motion pictures, and field trips to refineries, mines, quarries, mills, kilns, foundries, machine shops, and other manufacturing firms assist the students in gaining an understanding of the processing and utilization of many kinds of materials.

480. STUDENT TEACHING IN INDUSTRIAL ARTS EDUCATION 9 hours
See Education 480.

MATHEMATICS

PROFESSOR ABELE (Acting Chairman),
ASSOCIATE PROFESSOR OPATOWSKI, ASSISTANT PROFESSOR BENNETT,
ASSISTANT PROFESSOR KUHNS,
MRS. ROIDER, MR. LHAMON, MRS. KLINK

The Department offers courses designed primarily as part of a liberal education and as requirements for students in mathematics, science, engineering, education, and pharmacy. In all courses the theory developed is followed by applications to exercises and practical problems.

Students concentrating in mathematics should follow a sequence of courses through Mathematics 223. One year physics and chemistry should be completed. A reading knowledge of German or French is strongly recommended.

The requirement that all freshman students in liberal arts shall take Mathematics 111-112-113 began in September 1960 unless they elect to
take Mathematics 121 and 122, or Mathematics 131 and 132, or Mathematics 181 and 182.

The several courses for freshmen are based on the entrance units which are indicated as prerequisite for each course. The following table and the prerequisites listed with each course should be observed in registering for a course:

<table>
<thead>
<tr>
<th>FRESHMAN COURSES</th>
<th>Required of students in</th>
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</thead>
<tbody>
<tr>
<td>Math 111-112-113</td>
<td>Liberal Arts, Pre-pharmacy</td>
</tr>
<tr>
<td>Math 111-112</td>
<td>4 yr. Elementary Education</td>
</tr>
<tr>
<td>Math 111</td>
<td>Elementary Cadet Education</td>
</tr>
<tr>
<td>Math 121, 122, 132</td>
<td>Science, Mathematics</td>
</tr>
<tr>
<td>Math 131, 132, 133</td>
<td>Engineering, Science, Mathematics</td>
</tr>
<tr>
<td>Math 181, 182</td>
<td>Business Administration</td>
</tr>
</tbody>
</table>

### BASIC CURRICULUM FOR CONCENTRATION IN MATHEMATICS

#### FRESHMAN YEAR

| Mathematics 131, 132, 133 or 121, 122, 132 | 15 | 5 | 5 | 5 |
| Gen. Chem. 111, 112, 113                  | 12 | 4 | 4 | 4 |
| English C-1, C-2, C-3                     | 9  | 3 | 3 | 3 |
| Soc. Science Course                       | 9  | 3 | 3 | 3 |
| Physical Education                        | (3) | (1) | (1) | (1) |
| Lib. Arts Orientation                     | (1) | (1) |   |   |

**Total**

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#### SOPHOMORE YEAR

| Mathematics 221, 222, 223 or 133, 221, 222 | 15 | 5 | 5 | 5 |
| Ph. & Religion C-31, C-32, C-33           | 9  | 3 | 3 | 3 |
| Foreign Language                          | 12 | 4 | 4 | 4 |
| Speech, Art, Music                        | 9  | 3 | 3 | 3 |
| Physical Education                        | (3) | (1) | (1) | (1) |

**Total**

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#### JUNIOR YEAR

| Mathematics 223, or elect. and 322, 324   | 11 | 5 | 3 | 3 |
|Foreign Language                          | 9  | 3 | 3 | 3 |
|Physics 241, 242, 243                      | 15 | 5 | 5 | 5 |
|English or Amer. Lit. or Social Science Course| 9  | 3 | 3 | 3 |

**Total**

| 46 | 16 | 14 | 14 |
SENIOR YEAR
Mathematics Electives 12 4 4 4
English or Amer. Literature or
Social Science Course 9 3 3 3
Advanced Phys. Courses 8 5 3
Other Electives 15 3 6 6
Total 44 15 16 16

100. PREPARATION FOR COLLEGE MATHEMATICS
No Credit, 3 hours
Review of arithmetic; transition to algebra; factoring, fractions, linear and
quadratic equations; exponents and radicals.

111-112-113. FUNDAMENTAL MATHEMATICS 9 hours
A one year terminal course. Logic in mathematics and science, the num-
ber concept and number systems, arithmetic, the logic of algebra, exponents
and logarithms, definitions and use of trigonometric functions, introduction to
analytic geometry, various geometries, some classical problems.
Prerequisite: One year of high school Algebra.

121. COLLEGE ALGEBRA 5 hours
Factoring, fractions; equations in one, two and three unknowns; expon-
ents, radicals; quadratic equations. From here the algebra content is the
same as in Math 131.
Prerequisite: 1½ units algebra, 1 unit plane geometry.

122. TRIGONOMETRY 5 hours
The fundamental principles of the subject are developed and applied to
trigonometric reductions and to the solution of triangles. Numerous exer-
cises in geometry, physics, and mechanics are studied.
Prerequisite: Mathematics 121 or equivalent.

131. COLLEGE ALGEBRA AND TRIGONOMETRY 5 hours
Simultaneous quadratics, inequalities, binomial theorem, progressions, com-
plex numbers, theory of equations, and determinants; the trigonometry deals
with the formulas for the sum and difference of two angles, for the half
angle; sine law, cosine law, law of tangents; solutions by logarithms of gen-
eral triangles; trigonometric equations, inverse functions.
Prerequisite: 2 units algebra, 1 unit plane geometry, ½ unit trigonom-
etry; and/or successful completion of Engineering 100.

132. ANALYTIC GEOMETRY 5 hours
Straight lines; conics; translation and rotation of axes; higher plane curves;
parametric equations; polar coordinates; oblique coordinates; space curves
and surfaces; planes; quadrics; spherical coordinates.
Prerequisite: Mathematics 131 or Mathematics 121 and 122.

133. CALCULUS I 5 hours
Through exponential and logarithmic functions; some integration; appli-
ations to geometry and physics.

Prerequisite: Mathematics 132.

181. MATHEMATICS OF FINANCE I
5 hours
Selected portions of arithmetic, elementary algebra, and college algebra, including logarithms and binomial theorem.
Prerequisite: 1 unit high school algebra.

182. MATHEMATICS OF FINANCE II
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 181 or equivalent.

221. CALCULUS II
5 hours
Mean value theorems; indeterminate forms; formulas of integration; areas, volumes; applications; centroids.
Prerequisite: Mathematics 133.

222. CALCULUS III
5 hours
Moments of inertia; fluid pressure work; series, power series; approximate integration; partial differentiation; double, triple integrals; hyperbolic functions; applications.
Prerequisite: Mathematics 221.

223. DIFFERENTIAL EQUATIONS AND VECTOR ANALYSIS
5 hours
Equations of first order and degree; trajectories; homogeneous and extended linear equations with constant coefficients; operational methods; applications. Vector algebra; application to mechanics; differential operator del; divergence, curl; integration; work, potential.
Prerequisite: Mathematics 222.

283. ELEMENTARY STATISTICS
3 hours
This course deals with the concepts and practices commonly used in statistical problems of business, economics, education and social welfare.
Prerequisite: Mathematics 113, 121 or 182.

300. ANALYTIC 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.
Prerequisite: Mathematics 133.

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.
Prerequisite: Mathematics 133.
320. THEORY OF EQUATIONS  4 hours
Roots of polynomials; equations of higher degree; methods of solution; Sturm’s theorem; symmetric functions of roots; resultants, discriminants; introduction to matrices; geometric constructions.
Prerequisite: Mathematics 133.

322. ADVANCED CALCULUS  3 hours
Mean value theorems; series; partial differentiation, geometric interpretation; line integrals; gamma functions; introduction to Laplace transforms; theory of complex variables; conformal transformations.
Prerequisite: Mathematics 222.

324. ADVANCED CALCULUS  3 hours
Continuation of Mathematics 322.

330. BASIC STATISTICAL CONTROL  3 hours
An advanced course in statistics, presenting fundamental statistical aspects such as variability, multiple correlation and measures of functions of distribution; control charts; tests for significance; fundamentals of the theory of probability and sampling.
Prerequisite: Mathematics 222, 283.

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.
Prerequisite: Mathematics 133.

410. INTRODUCTION TO MODERN ALGEBRA  3 hours
Integers, rational, real and complex numbers, elementary group theory, rings, fields, determinants and matrices.
Prerequisite: Mathematics 133.

414. FINITE MATHEMATICS  3 hours
Selected topics in elementary mathematical logic and set theory and an introduction to elementary probability theory.
Prerequisite: Mathematics 133.

MUSIC

PROFESSOR ROIDER (Chairman), ASSOCIATE PROFESSOR MATTHEWS,
ASSISTANT PROFESSOR HILL, ASSISTANT PROFESSOR BYRD,
ASSISTANT PROFESSOR GRIGSBY, MR. WEITZ,
MRS. SPOTTS, MR. SCHUMACHER

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 IN MUSIC**

Suggested schedule for students majoring in Music leading to the Bachelor of Arts in Music degree that conforms with the requirements of the National Association of Schools of Music, Ohio Northern University, and Department of Music.

**FRESHMAN YEAR:**

**Fall**
- Gym
- Structure of Music: 3
- English Comp.: 3
- *Natural Science*: 3-4
- Foreign Language: 4
- Applied Music: 2-3
- Choir-Band-Orch.

**Winter**
- Gym
- Structure of Music: 3
- English Comp.: 3
- Natural Science: 3-4
- Foreign Language: 4
- Applied Music: 2-3
- Choir-Band-Orch.

**Spring**
- Gym
- Structure of Music: 3
- English Comp.: 3
- Natural Science: 3-4
- Foreign Language: 4
- Applied Music: 2-3
- Choir-Band-Orch.

*Natural Science requirement for the BA degree in Music suggests Mathematics, Physics, or a combination of both.

**SOPHOMORE YEAR:**

- Gym
- Structure of Music: 3
- Religion Core: 3
- Social Science: 3
- Foreign Language: 4
- Applied Music: 2-3
- Choir-Band-Orch.

**JUNIOR YEAR:**

- English Literature: 3
- Social Science: 3
- Music History: 3
- Analysis: 3
- Choral
- Instrumental
- Applied Music: 3-4
- Choir-Band-Orch.

**English Literature**: 3
- Social Science: 3
- Music History: 3
- Counterpoint: 3
- Choral
- Instrumental
- Applied Music: 3-4
- Choir-Band-Orch.

**English Literature**: 3
- Social Science: 3
- Music History: 3
- Composition: 3
- Choral
- Instrumental
- Applied Music: 3-4
- Choir-Band-Orch.
SENIOR YEAR:

| Conducting | 2 |
| Class Voice or Instrumental Class | 2 |
| Music Problems  | 3 |
| Applied Music Choir-Band-Orch. | 3-4 |

Conducting 2
Class Voice or Instrumental Class 2
Music Problems 3
Applied Music 3-4
Choir-Band-Orch.

Additional credit toward graduation may be obtained by taking advanced music courses in any area on a private instruction basis.

Music courses in the Junior and Senior Years may be changed to give the student the opportunity to take education and music methods courses to complete the requirements for certification to teach in the public schools of the State of Ohio.

Required Academic Hours — 73 (minimum) plus Gym
Required Music Hours — 107 (minimum)

Suggested schedule for students majoring in Music Education (Bachelor of Science in Education) that conforms with the requirements of the State Department of Education, Ohio Northern University and the Department of Music.

FRESHMAN YEAR:

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<tr>
<td>Gym</td>
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*Natural Science with hours earned in one field or a combination of Biology, Chemistry, Physics or Mathematics.

SOPHOMORE YEAR:

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Gym 3
Religion Core 3
Human Gr. & Dev. 3
Social Science 3
Art 3
Applied Music 2-3
Choir-Band-Orch. 1

Gym 3
Religion Core 3
Speech 3
Social Science 3
Elective 3
Applied Music 2-3
Choir-Band-Orch. 1
JUNIOR YEAR:

Primary Methods 3  Intermediate Meth. 3  Jr. & Sr. Hi Meth. 3
Music History 3  Music History 3  Music History 3
Eng. Lit. 3  Eng. Lit. 3  Eng. Lit. 3
Elective 3  Elective 3  Elective 3
Choir-Band-Orch. 1  Choir-Band-Orch. 1  Choir-Band-Orch. 1

SENIOR YEAR:

Stu. Teaching 5  Stu. Teaching 4  Elective 3
Conducting 2  Conducting 2  Conducting 2
Teaching of  Woodwind Inst. 2  Teaching of  Stringed Inst. 2
Brass & Perc. 2  Sch. Org. & Adm. 3  School & Society 3
H. S. Curriculum 3  Elective 3  Elective 3
Elective 3  Applied Music 2-3  Applied Music 2-3
Applied Music 2-3  Choir-Band-Orch. 1  Choir-Band-Orch. 1
Choir-Band-Orch. 1  Choir-Band-Orch. 1

ADDITIONAL CREDIT TOWARD GRADUATION IS OBTAINED BY TAKING ADVANCED COURSES:

Participation in Vocal or Instrumental Ensembles
Orchestration
Choral Arranging
Class Voice

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

20a. 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.

20b. 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.

20c. **ORGAN**

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.

20d. **STRINGS**

20e. **WOODWINDS**

20f. **BRASSES**

20g. **PERCUSSION**

After a thorough preparation in the fundamentals, instruction 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.

35. **CHORUS - CHOIR**

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.

40. **BAND**

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.

45. **ORCHESTRA**

All university students who play orchestral instruments are given the opportunity to participate in the Lima Symphony Orchestra. Enrollment is subject to audition.

50. **VOCAL ENSEMBLE**

Enrollment by permission of instructor.

55. **INSTRUMENTAL ENSEMBLE**

Enrollment by permission of instructor.
MUSIC FEES
All students who register for private instruction in voice, piano, organ or other instrument are required to pay a $50 fee for two lessons each week.

COURSES IN MUSIC

101-102-103. THE STRUCTURE OF MUSIC  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, modulation and the non-harmonic tones are added. Original work includes the hymn tune and simple two and three part song-forms.

111. MUSIC FOR THE ELEMENTARY CLASSROOM TEACHER (Primary)  2 hours
Summer and Evening Division Course  3 hours
Music activities, music materials, and literature, unit planning and teaching methods and skills for the elementary classroom teacher—grades 1-3 including kindergarten. This includes the use of the auto-harp, melody bells, rhythm instruments, records, and creativity.

112. MUSIC FOR THE ELEMENTARY CLASSROOM TEACHER (Intermediate)  2 hours
Summer and Evening Division Course  3 hours
Music activities, music materials, and literature, unit planning and teaching methods and skills for the elementary classroom teacher—grades 1-3 including kindergarten. This includes the use of the auto-harp, melody instruments, records, and creativity.

113. ADVANCED MUSIC METHODS FOR THE CLASSROOM TEACHER  2 hours
Summer and Evening Division Course  3 hours
Concentration on further development of the elementary music program.

200. THE STUDY OF MUSIC  3 hours
A survey type course stressing listening experience rather than the technicalities of musical development in history. Each quarter covers material inclusive of the seventeenth century, eighteenth and early nineteenth centuries, and from the Romantic period to the present time. Each quarter includes rudiments in musical analysis and score reading. The aim of the Course is to equip the student with the tools necessary to a more full and intelligent enjoyment of good musical literature. Meets the Liberal Arts music requirement.

211-212-213. THE STRUCTURE OF MUSIC  9 hours
Altered chords, non-harmonic tones, chromatics, and advanced modulation are added to the previous year of the Structure of Music. Analytical technique of music compositions and the study of Musical Form from the motive and song-form to the sonata and contrapuntal forms.
Prerequisite: The Structure of Music 103.
301-302-303. Conducting 6 hours
Courses in principles of conducting, concluding with conducting choral, band and orchestra scores.

311. Primary Music Methods (Music Teachers) 3 hours
The study of music techniques, teaching procedures, and the use of materials in the primary grades. This course is designed for music teachers and supervisors.

312. Intermediate Music Methods (Music Teachers) 3 hours
The study of music techniques, teaching procedures, and the use of materials and instruments in the intermediate grades. This course is designed for music teachers and supervisors.

313. Junior and Senior High School Methods (Music Teachers) 3 hours
The study of music techniques, teaching procedures and the use of materials and instruments in the junior and senior high school. This includes the study of band, orchestra, and chorus organization and management, high school repertoire, competition--festival and public performance participation.

320. Class Voice 2—6 hours

330. Functional Piano 1 hour
Group instruction designed to prepare the music specialist and general student in the piano literature appropriate to the primary and secondary school situations. Improvisation, the extemporaneous harmonization of melodies and experience in vocal and instrumental accompaniment are included in the course of study.

340. Music in Worship 3 hours
A consideration of the form and symbols of the service of worship. A course designed to aid the Pre-Theological student to an understanding of the traditional and modern trends in all forms of worship with special emphasis on the ties between music, other arts, and the litany of a service.

350. Technics and Materials for Church Choirs 3 hours
A study of methods and materials for church choirs. The study of practical problems of mounting a church service, chanting, processional, etc., with consideration of anthem selection and performance, with observation of choirs.
Prerequisite: At least 30 quarter hours of music courses.

351-352-353. History of Music 9 hours
These courses deal with the origin and development of music, studied from an appreciative basis.

420. Instrumentation and Orchestration 1—3 hours
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.

430. COUNTERPOINT AND CHORAL ARRANGING 1—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.

440. SPECIAL PROBLEMS 1—3 hours
Open only to seniors who are majors in music.

441. TEACHING OF BRASS AND PERCUSSION INSTRUMENTS 2 hours

442. TEACHING OF WOODWIND INSTRUMENTS 2 hours

443. TEACHING OF STRINGED INSTRUMENTS 2 hours
Courses designed to give the prospective teacher a general knowledge of the playing technique of the instruments in the band and orchestra.

480. SUPERVISED TEACHING IN ELEMENTARY, JUNIOR, AND SENIOR HIGH SCHOOL 6—12 hours

PHILOSOPHY AND RELIGION

PROFESSOR TINSLER (Chairman), ASSISTANT PROFESSOR HODGES, ASSISTANT PROFESSOR SMITH, ASSISTANT PROFESSOR HINDERLITER

FIELD OF CONCENTRATION (Major)
A concentration of 52 hours, exclusive of the core course, C-31, 32, 33, required of all students, shall constitute a field of concentration in philosophy and religion and shall include the following courses: Religion 241, 242, 243 (Bible History), Philosophy 201, 202, 203 (Logic and Introduction to Philosophy), Religion 301, 302, and 313 (St. Paul, Church History and Comparative Christianity), and Philosophy 301, 302, 303 (Ethics, Aesthetics, and Philosophy of History), together with a basic course in Sociology and General Psychology, Problems in Religion (440) or Problems in Philosophy (440) in the senior year; plus electives in either philosophy or religion or both to total at least 52 hours.

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.

PHILOSOPHY

In the Department of Philosophy a search is made for a comprehensive view of the universe and of man's place in it. Assumptions are examined
and conclusions evaluated. The goal is the achievement of principles of sound reasoning in connection with the living issues of both personal and social life.

201. Logic
   A study of the principles and methods of reasoning with the purpose of improving skill in reasoning. Examines the relations of truth and validity, the uses of language, the sources of fallacies, and the structure of deductive arguments.

202-203. Introduction to Philosophy
   A two quarter course initiating the student into the perennial problems of philosophy—its living issues—by means of firsthand acquaintance with the writings of prominent philosophers through the ages.

301. Ethics
   A critical study of the various moral theories developed in the Western world in its attempt to formulate a standard for moral behavior applicable to individuals and social groups.

302. Aesthetics
   A study of the theories relating to the creation, appreciation and critical evaluation of objects of art. Discusses the various theories of the concept of beauty and related subjects of aesthetic valuation.

303. Philosophy of History
   A study of the principles and methods used by historians in their writing of history. Critical discussion of the suggested theories of the meaning of recorded events of human social development.

401. Philosophy of Science
   Discussion of the concepts and assumptions of the scientific method of approach to empirical knowledge. Study of the relations of philosophy and science with special attention to the impact of modern scientific developments on metaphysical speculations.

402. Science and Values
   Attempts to orient the student towards an integral understanding of life and the appreciation of its possibilities beyond the limited realm of strict scientific investigation. Examines the place of moral, aesthetic, and religious values in a world of facts and technology.

403. American Philosophy
   Reading and discussion of selected writings of modern American philosophers, beginning with C. S. Peirce and including W. James, J. Dewey, G. Santayana, A. N. Whitehead and some influential contemporary philosophers.

300 and 400 courses in philosophy have the 200 series in philosophy or the Core course as prerequisites.
440. PROBLEMS IN PHILOSOPHY
1—3 hours
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.

201. BIBLE CUSTOMS AND MANNERS 3 hours
A study of the social, political and religious customs and folkways of the peoples of the Near East, to provide a background and local color for understanding of the Bible.

202. INTRODUCTION TO RELIGION 3 hours
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.

203. THE MESSAGE OF JESUS CHRIST 3 hours
The teachings of Jesus Christ, as recorded in the New Testament Gospels, with special attention to their personal and social application to everyday life.

241, 242, 243. BIBLE HISTORY 9 hours
A study of the history of the Hebrew and early Christian peoples of Old and New Testament times, with special reference to the scriptural record, and in relation to the cultural, political and religious influence of their Near East neighbors. The fall quarter traces this history from early times to the reign of Solomon; the winter quarter, from the period of the Divided Kingdom through the Exile and Restoration with special attention to the prophets; the spring quarter, from the Maccabean Period through the times in which Jesus lived and taught, the work and writings of St. Paul, the beginnings of the Early Church, and the writing and selection of the New Testament Scriptures.

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.
313. COMPARATIVE CHRISTIANITY 3 hours
A study of Roman Catholicism, Greek Orthodoxy, and the chief denominations of Protestantism to ascertain their key concepts, chief emphasis and doctrines which distinguish them and constitute their peculiar contribution to Christianity in its current phases.

401. PSYCHOLOGY OF RELIGION 3 hours
A study of the religious behavior 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.
Prerequisite: Appropriate background in psychology or religion or consent of the instructor.

402. 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.

403. CHRISTIAN ETHICS 3 hours
A study of the theories of value in the field of conduct which have been recognized as "Christian ethics," with special attention to the presuppositions which underly it. Ethics relating to the individual, the family, society, economics, the state, international relations, war and the like will be studied in the light of the Christian presuppositions.

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.

PHYSICAL EDUCATION

PROFESSOR LAMB (Chairman), ASSOCIATE PROFESSOR ENGLISH,
ASSISTANT PROFESSOR ROBERSON, ASSISTANT PROFESSOR BANKS,
ASSISTANT PROFESSOR PICKERING,
MR. MICHAEL, MR. ROBINSON, ASSISTANT

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.
HEALTH & PHYSICAL EDUCATION
(Curriculum for majors)

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Some variation in sequence is permitted those students who have teaching fields in Mathematics, Biology, Science, Industrial Arts. These four teaching fields along with Driver Education are the best for Majors of Health & Physical Education, according to our experience.

In as much as requirements are high for State Certification, it is recommended that as many electives as possible be taken in fields outside its department.
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 1 hour each
   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 1 hour each
   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 season, 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.

In addition to the requirements listed below each major in the health and physical education program must be affiliated in some manner with one of the major sports in the inter-collegiate program.

101a-102a-103a. PHYSICAL EDUCATION FOR MAJORS 1 hour each

201a-202a-203a. PHYSICAL EDUCATION FOR MAJORS 1 hour each

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

112. FIRST AID AND SAFETY
Lectures, discussion and practice in the giving of first aid in cases of emergency. 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.
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.

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.

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.

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.

223. BODY MECHANICS
This Course deals with the general body mechanics of the human organ
ism, 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.

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 and recreation 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.

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, teamplay and methods for instruction of hockey, soccer, and speedball.

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.

323a. METHODS IN COACHING BASEBALL 2 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.

323b. METHODS IN COACHING TRACK 2 hours

This Course covers the methods and theory of successful track coaching. 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.

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 supervision, in all sports in season. Hours arranged.

341. FOOTBALL OFFICIATING 3 hours
This Course includes the study of the football rules from the standpoint 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 3 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.

402. NORMAL DIAGNOSIS 3 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.

403. HISTORY OF PHYSICAL EDUCATION 2 hours
This Course traces the evolution and development of physical education 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.

440. PROBLEMS IN PHYSICAL EDUCATION 1—3 hours
This Course deals with specific problems in physical and health education and is open to properly qualified students. Time to be arranged.

480. STUDENT TEACHING
See Education 480.

PHYSICS ✓

PROFESSOR ABELE (Chairman), PROFESSOR BENEDICT, MR. MESSICK

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, 303, 313, 333 and at least two hours each of 310, 320, and 330. Mathematics through 223, and a year of general chemistry and physical chemistry should be completed. A reading knowledge of German or French is strongly recommended.

### BASIC CURRICULUM FOR CONCENTRATION IN PHYSICS

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 131, 132, 133 or 121, 122, 132</td>
<td>15</td>
</tr>
<tr>
<td>Gen. Chem 111, 112, 113</td>
<td>12</td>
</tr>
<tr>
<td>English C-1, C-2, C-3</td>
<td>9</td>
</tr>
<tr>
<td>Social Sc. Courses</td>
<td>9</td>
</tr>
<tr>
<td>Physical Education</td>
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<tr>
<td>Lib. Arts Orientation</td>
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Total: 45 (49) 15 (17) 15 (16) 15 (16)

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Mathematics 221, 222, 223 or 133, 221, 223</td>
<td>15</td>
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<tr>
<td>Physics 241, 242, 243</td>
<td>15</td>
</tr>
<tr>
<td>Ph. &amp; Religion C-31, C-32, C-33</td>
<td>9</td>
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<tr>
<td>Foreign Language</td>
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<tr>
<td>Physical Education</td>
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Total: 51 (54) 17 (18) 17 (18) 17 (18)

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Physics 301, 313, 303</td>
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<tr>
<td>Foreign Language</td>
<td>9</td>
</tr>
<tr>
<td>Physical Chemistry 331, 332, 333</td>
<td>12</td>
</tr>
<tr>
<td>Engl. or Amer. Liter. or Social Science Course</td>
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</tr>
<tr>
<td>Th. &amp; Adv. Lab. in Phys. 310, 330, 320</td>
<td>3</td>
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</table>

Total: 46 (46) 16 (16) 16 (16) 14-15
SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Physics 323, 253, 403 or 333</td>
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</tr>
<tr>
<td>Th. &amp; Adv. Lab. 310, 330, 320</td>
<td>3-6</td>
</tr>
<tr>
<td>Speech, Music, Art</td>
<td>9</td>
</tr>
<tr>
<td>Engl. or Amer. Liter. or Social Science</td>
<td>9</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Total 42-45 15-16 14-15 13-14

210. PHYSICS (formerly 205) 4 hours

A lecture and demonstration course of fundamental physical laws in mechanics, heat, electricity, sound, and light for education majors. Class meets five days a week.

Prerequisites: Math 111, 112; Biology 111; Chemistry 105.

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 required for pre-Medical, pre-Dental and Pharmacy students. Three class periods and two hours of laboratory. 221 should precede 222 and 223.

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

241. PHYSICS: MECHANICS OF SOLIDS AND FLUIDS 5 hours

242. PHYSICS: ELECTRICITY AND MAGNETISM 5 hours

243. PHYSICS: SOUND, HEAT AND LIGHT 5 hours

A series of courses designed for engineers and physical science majors. Four class periods and two hours of laboratory. 241 should precede 242 and 243.

Prerequisite: Calculus to be taken concurrently.

250. DESCRIPTIVE ASTRONOMY 3 hours

Study of the celestial bodies including distance, motion, size, distribution of planets, stars, extragalactic 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.

Prerequisite: Physics 221 or 241 and Calculus 222.

303. 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.

Prerequisite: General Chemistry and Physics 243.
310. **Theory and Advanced Laboratory: Mechanics** 1—3 hours

313. **Electricity and Magnetism** 5 hours
   A study of electric and magnetic fields, dielectrics, inductance, capacitance, direct and alternating current circuits and their applications.
   **Prerequisite:** 222 or 242 and Calculus.

320. **Theory and Advanced Laboratory: Light, Heat, Sound** 1—3 hours

323. **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 241, 242, 243.

330. **Theory and 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 experiment. Not more than three hours credit may be earned in any one of the three quarters. Offered every quarter.
   **Prerequisite:** 241, 242, 243, and Calculus.

333. **Light** 5 hours
   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** 4 hours
   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.

400. **Advanced Light** 3 hours
   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.
   **Prerequisite:** Physics 241, 242, 243, and Calculus.

403. **Nuclear Reactor Principles** 3 hours
Prerequisite: Thermodynamics 301 or equivalent.

410. ADVANCED ELECTRICITY  
3 hours  
An Honor Course in electricity and magnetism. Requirements the same 
as for Course 400. Only one Honor Course open each year.

SOCIOLOGY AND PSYCHOLOGY

PROFESSOR MARKLE (Chairman),
ASSISTANT PROFESSOR CRIDER,
ASSOCIATE PROFESSOR MILLER, MR. WIRE

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 personalities 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 the area of Social Welfare 
the student must complete the following courses:

I. HUMANITIES

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal Arts Orientation</td>
<td>1</td>
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<tr>
<td>C-1-2-3 English Composition</td>
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<tr>
<td>201-202-203 English Literature</td>
<td>9</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>211-212-213 American Literature</td>
<td></td>
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<tr>
<td>A Foreign Language</td>
<td>24</td>
</tr>
<tr>
<td>C-31-32-33 Historical Study of Philosophy and Religion</td>
<td>9</td>
</tr>
<tr>
<td>271 Elements of Speech</td>
<td>3</td>
</tr>
<tr>
<td>200 Introduction to Art</td>
<td>3</td>
</tr>
<tr>
<td>200 Introduction to Music</td>
<td>3</td>
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</table>

II. NATURAL SCIENCES

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>111-112-113 Fundamental Mathematics</td>
<td>9</td>
</tr>
<tr>
<td>111-112-113 General Biology</td>
<td>12</td>
</tr>
</tbody>
</table>

III. SOCIAL SCIENCES

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>201-202-203 American Government</td>
<td>9</td>
</tr>
<tr>
<td>201 General Psychology</td>
<td>5</td>
</tr>
<tr>
<td>321 Social Psychology</td>
<td>5</td>
</tr>
<tr>
<td>201-202-203 Marriage and the Family</td>
<td>9</td>
</tr>
<tr>
<td>321-323 Criminology and Juvenile Delinquency</td>
<td>10</td>
</tr>
</tbody>
</table>
341 Introduction to Social Welfare 3 hours
342 Social Welfare Needs and Resources 3 hours
343 Social Work Methods 3 hours
441-442 Social Welfare Investigation 6 hours
443 Social Field Work Observation and Orientation 2.5 hours
443 Human Growth and Development 3 hours

In addition to the above requirements the following courses are recommended to majors in this area:

History 111, 112, 113 Western Civilization 9 hours
History 211-212-213 United States History 9 hours
Math. 283 Elementary Statistics 3 hours
Soc. 301 Social Pathology 5 hours
Econ. 201-202-203 Principles of Economics 9 hours
Soc. 331 Cultural Anthropology 5 hours
Geog. 400 Human Geography 5 hours

In order to complete a field of concentration in this department in the area of Sociology-Psychology, the student shall complete forty-eight hours in sociology and psychology. Twenty-four hours are to be taken in psychology as follows: General Psychology, Applied Psychology, Abnormal Psychology, and Social Psychology. Twenty-four hours are to be taken in sociology as follows: Courtship, Marriage and the Family, Social Factors in Marriage Adjustment, Life and Family Relationships, and fifteen additional hours in sociology chosen from among the other sociology courses. Additional hours in either or both fields may be taken up to a maximum of sixty hours in the department.

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.

Beginning with the Spring of 1963 all majors will be required to take the Graduate Record Examination.

**PSYCHOLOGY**

201. GENERAL PSYCHOLOGY 5 hours
A general survey of psychological facts and principles stressing human experience and behavior. Open to qualified freshmen with the consent of the instructor.

213. EDUCATIONAL PSYCHOLOGY 3 hours
A study of the learning process and the conditions that promote learning. Prerequisite: Psychology 201 or permission of instructor.
300. Child Psychology
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 instructor.

311. Psychology of Personality
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.

321. Social Psychology
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.

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

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

411. Counseling and Guidance
A study of the basic psychological principles involved in educational, vocational, and personnel counseling; the application of these principles to a sound guidance program.
Prerequisite: Psychology 201.

421. Abnormal Psychology
Study of behavior pathology; the neuroses and psychoses; various theoretical approaches to the problems of etiology.
Prerequisite: Psychology 201.

423. Psychology of the Exceptional Child
The classification of the non-typical child; the use of the school and other sources for meeting his needs. Special attention to the slow learner and retarded child.
Prerequisite: Psychology 201.

424. Psychology of the Gifted Child
An analysis of the psychological problems of the gifted child.
Prerequisite: Psychology 201.
440. Psychological Problems 1-3 hours
Minor investigation. Open only to qualified Seniors. By arrangement.

Sociology

201. Courtship and Marriage 3 hours
A practical course in the study of adjustment in courtship, preparation for
marriage and for family living.

202. Marital Adjustment 3 hours
An analysis of the factors in modern life affecting the stability of the
family. A critical study of the biological, psychological, and social factors in
marital adjustment.

203. 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. General Sociology 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 5 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 selec-
tion, birth control, standard of living and migrations are discussed.

301. Social Pathology 5 hours
Social Pathology, as it concerns our own society, including the study of
such problems as child labor, poverty, crime, the family, public health, etc.

321. Criminology 5 hours
A consideration of the problems of crimes and criminals. Special attention
is given to the factors conducive to the making of criminals, together with
a suggested program of treatment and prevention. Some study of penal
institutions and of the history of punishment.

323. Juvenile Delinquency 5 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. The Culture of Early Man (Cultural Anthropology) 5 hours
A study of preliterate culture, its relation to geography, biology and psy-
chology. Study of primitive religion, family patterns, and cultural variations.

341. Introduction to Social Welfare 3 hours
The historical development of health and welfare services, public and
voluntary, from English and early American background to the present.
342. **Social Welfare Needs and Resources** 3 hours
The function and programs of state and local governments, private and voluntary agencies, in meeting the problems of the aged, unemployed, disabled, handicapped, children and other special groups.

343. **Social Work Methods** 3 hours
Introduction to the basic processes used in social work practices; social case work, social group work, and intergroup or community work.

400. **Human Geography** 5 hours
The interaction of man and his physical environment.

411. **Rural-Urban Sociology** 5 hours
A comparative study of the organization, social processes, problems, and interrelationships of rural and urban communities.

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.

403. **Race Relations** 5 hours
A study of the phenomena which arise when groups of people who differ radically or culturally come into contact with one another.

421. **Public Opinion and Propaganda** 3 hours
An analysis of the nature and sources of contemporary public opinion and the nature, extent, and direction of propaganda in contemporary society.

422. **Marriage and Family Counseling** 5 hours
A course dealing with the development of premarital and marital counseling together with the details of its practice. Emphasis upon role playing in a counseling situation. This course is open only to students with the approval of the instructor.

*Prerequisite: Sociology 201-202.*

430. **Conference Leadership in Human Relations** 3 hours
A course designed to aid participants in better use of conference leading techniques by furnishing them with basic information regarding techniques and offering them an opportunity to lead supervised practice discussion.

440. **Social Problems** 1-3 hours
Minor investigation. Open only to qualified seniors by arrangement.

441-442. **Social Welfare Investigation** 6 hours
Social welfare investigation and methods of research and their application to the analysis of social phenomena.

443. **Social Field Work Observation and Orientation** 2-5 hours
To enable qualified students to observe and participate in social work programs under the supervision of professional workers.
GEOGRAPHY COURSES

400. HUMAN GEOGRAPHY
The interaction of man and his physical environment.

5 hours

433. GLOBAL GEOGRAPHY
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.

5 hours
College of Engineering

LAWRENCE HARRY ARCHER, Dean

ACADEMIC RECOGNITION
The Engineers' Council for Professional Development, the only official accrediting agency for engineering curricula, has accredited all of the programs in the College of Engineering. Each department, Civil, Electrical, and Mechanical Engineering, enjoys the distinction. Membership by the College is held in the American Society for Engineering Education. The Ohio State Board of Registration for Professional Engineers and Surveyors lists Ohio Northern University on their approved list.

In all, the College of Engineering at Ohio Northern University is recognized as a quality school.

PURPOSE
Basically, the engineering student learns how to think in a logical sequence, subject to the facts involved. In keeping with the avowed purpose of Ohio Northern University, it is the aim of the College of Engineering to develop the whole individual. It is our purpose to have each student attain the highest standard of undergraduate proficiency in the areas of subject matter basic to all engineering and education in the essentials of his chosen branch of the profession as well as the areas of living. Through this emphasis each graduate should be able to have a full life of professional performance and true citizenship.

HISTORY
During the eighty-two years of its existence the College of Engineering has had more than twenty-five hundred graduates. The Civil Engineering Department had its first class in 1882; Electrical Engineering, in 1898; and Mechanical Engineering, in 1904.

The student has always been treated as an individual. Classes have been small. Close faculty-student relationship is still maintained today. The best interests of the student are the first and most important consideration of faculty and staff at Ohio Northern University.

ADMISSION
An applicant for admission to the College of Engineering should write to the Admissions Office, Ohio Northern University, Ada, Ohio, or to the Dean, College of Engineering, for complete information and instructions for admission. More complete data is found on page 6 of this bulletin. You will find it advantageous to apply early. We would suggest that this procedure start in the junior year of high school and be completed by the end of the Christmas Season of the senior year. Late applicants are accepted but on a first come first served basis.
We welcome students who have not spent four years sitting in required classes, but have attained a level of knowledge in English, mathematics, and science, by independent study, far in excess of the standard four-year high school course.

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

A. High School or Academy Graduates. Each applicant must have course distribution as follows: English, 4 years; Mathematics, 4 years; Science, 4 years; Language other than English, 2 years; and others, 2 years.

In mathematics the distribution must include two units of algebra; one and one-half, geometry; and one-half, trigonometry. The sciences include general science, biology, chemistry, and physics, with chemistry and physics required.

Those people who meet the general University admission requirement but are found to be deficient in mathematics or science, will be required to make up the material without college credit. This will take at least one Summer School above the regular program and in most cases result in a five-year program. Applicants who are short language other than English shall over-come the shortage by taking a foreign language in lieu of a humanity elective while in regular attendance.

B. Transfer Students. 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.

C. 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.

LOAD

The standard load in the College of Engineering is listed under each department term by term. Extra hours based upon scholarship attainments may be granted by the Dean upon recommendation of the student’s advisor and the payment of the extra hour fee.

Engineering students are responsible to fulfill the requirements of the current year’s catalog as they apply to that year of his course.
ACADEMIC STANDING

The general categories are good standing, warning, probation, suspension, and dismissal. Any student who is in good standing, which is the normal condition of admission, and makes less than 2.0 point average for the quarter is placed on warning. A student is warned only once. Warning means that the faculty of the College of Engineering is not satisfied with the work done by the student the first time that the student falls below 2.0.

At any future time when the student drops below 2.0 for the quarter or accumulative average, he is placed on probation. Probation means that the quarter's work or the accumulative work is not satisfactory for a second time. At this stage the student's load is reduced. In extreme cases the Dean may place any student on probation without first having had the student on warning.

When a student is on probation and falls below 2.0, either for the quarter or accumulative average, he is subject to suspension or dismissal. Suspension and dismissal differ only in matter of degree. A person who is suspended has the privilege of re-applying for admission after the lapse of a year. When a student is dismissed, this is final action.

Students on warning are required to have at least monthly consultations with their adviser and the Dean, while students on probation are required to meet with their adviser and the Dean at least every two weeks.

CLASSIFICATION

The minimum requirements for Sophomore standing are forty-six credit hours which presupposes calculus either concurrently or as a prerequisite, accumulative point average of 2.0; for Junior standing, ninety-seven credit hours of which presupposes calculus either concurrently or as a prerequisite, and an accumulative point average of 2.0; for Senior standing, 162 credit hours and an accumulative point average of 2.0. No student's classification is changed during the academic year.

GRADUATION AND DEGREES

Two hundred thirty-eight hours of which six are in physical education and six in chapel are required for graduation. Each student is expected to belong and to 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 with an accumulative point average of 2.0 in all engineering courses. No "D" grade in the students department is allowed to count toward graduation. A student is not permitted to be a candidate for more than one degree at any one time.

All degree candidates must spend their 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. Further information is furnished to all students as freshmen and again as seniors.

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

ENGINEERING BUILDING

The College of Engineering, staff, and faculty are housed in a three story, thirty-eight room brick structure. The building has special provision for well-equipped drafting rooms, laboratories, and classrooms.

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

![Students In Typical Design Class](image)

PROFESSIONAL AND TECHNICAL ORGANIZATIONS

All engineering students are encouraged to belong and to participate in the the graduation requirements. From the beginning each student must realize that he is a member of an honorable profession and that these organizations are a part of his program.

The student branch of the Ohio Society of Professional Engineers embrace
all students 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. Monthly meetings are held.

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 Institute of Radio Engineers—American Institute of Electrical Engineers Joint Student Branch holds monthly meetings. Topics pertinent to the field of Electrical Engineering are presented and discussed at their meetings. 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 and its allied fields. Meetings are held once each month. Members join one or more of the several national and international technical societies in this field. The student section 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 are 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. All pre-engineering students are enrolled in the College of Engineering.
All freshman pre-engineering students learn the art of Engineering Graphics. This is their first contact with the faculty of the College of Engineering.

Students entering with advanced credit from another liberal arts college must be in residence at least six quarters and complete a minimum of 90 hours before the B.A. and B.S. Degrees are awarded by Ohio Northern University. Forty-five of these 90 must be courses which are approved by the College of Liberal Arts while all of them must be approved by the College of Engineering.

Normally the major area in Liberal Arts is Business Administration, Mathematics, Physics, or Chemistry. Students entering the Arts-Engineering curriculum must conform to the rules and regulations of the College of Liberal Arts and the College of Engineering.

Those students entering from other selected liberal arts colleges with three years of work get the B.A. degree from the home institution after completing the junior year engineering program at Ohio Northern University. For specific data the home institution catalog must be consulted. After completing the junior and senior years in the College of Engineering, the appropriate engineering degree is awarded.

**Surveying Field Practice**

All engineering students take the Surveying Camp either at the end of the first year or before the second year starts.

**Freshman and Sophomore Engineering Curriculum**

Dean Archer, Associate Professor Hillery, Mr. Stimmel, 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 or Mechanical Engineers for the reason that the sciences basic to Engineering—Mathematics, Physics, Chemistry, and some Engineering Science—are essential in all branches of Engineering.

**FRESHMAN YEAR**

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<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<tbody>
<tr>
<td>Physical Education (P.E. 101, 102, 103)</td>
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</tr>
<tr>
<td>Math (131, 132, 133)</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>Chemistry (111, 112, 113)</td>
<td>4</td>
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<tr>
<td>English (C-1, 2, 3)</td>
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<tr>
<td>Social Science Elective**</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Orientation (E. 101, 102, 103)</td>
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<td>1</td>
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</tr>
<tr>
<td>Engineering Graphics (E. 111, 112, 113)</td>
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**SURVEYING CAMP**

Surveying I (C.E. 211) Pre-Fall or Post-Spring 5 hours

**SOPHOMORE YEAR**

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<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>Physical Education (P.E. 201, 202, 203)</td>
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<tr>
<td>Math (221, 222, 223)</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>Professional (E. 201, 202)</td>
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<tr>
<td>Shop (E. 211, 212, 213)</td>
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</tbody>
</table>

**See Page 144 for details.**

**FOR CIVIL ENGINEERING STUDENTS**

Geology, Speech, and Surveying II (C.E. 221,271, C.E. 213)

3 3 5

**FOR ELECTRICAL ENGINEERING STUDENTS**

Speech, Elective, and Electric & Magnetic Circuits (271, - - , E.E. 213)

3 3 5

**FOR MECHANICAL ENGINEERING STUDENTS**


3 3 2-3

18 18 19
CIVIL ENGINEERING

DEAN ARCHER, ASSOCIATE PROFESSOR HILLYER,
ASSISTANT PROFESSOR WILLIAMSON,
ASSISTANT PROFESSOR YALCIN, MR. STIMMEL

Although many of the former divisions have grown into separate depart-
ments, Civil Engineering offers greater opportunities than ever before. The
Civil Engineer conceives, designs, and supervises the building of 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, San-
itary 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 ex-
cellent.

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

TESTING MATERIALS LABORATORY

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, compressometers, 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, compaction outfit, direct single shear apparatus, double shear equipment, triaxial apparatus with pore pressure attachment, and Proctor and Howard miniature moisture density apparatus.

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. The Civil Engineering graduate is qualified to go to higher specialized fields for further study and to make teaching his life’s career.

See page 137 for the program of the Freshman and Sophomore years.

**JUNIOR YEAR**

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<thead>
<tr>
<th></th>
<th>FALL</th>
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<tr>
<td>Statics and Mechanics of Materials I, II</td>
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<tr>
<td>(C.E. 301, 302, 303)</td>
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<td>Engineering Analysis and Theory of Structures I</td>
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<tr>
<td>(E. 301, C.E. 313)</td>
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<tr>
<td>Fluid Mechanics and Highways (C.E. 322, 323)</td>
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<td>Route Surveying and Plain Concrete (C.E. 331, 333)</td>
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<td>Thermodynamics and Dynamics (M.E. 301, 322)</td>
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<td>Humanities Elective**</td>
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<td>Elective</td>
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SENIOR YEAR

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<thead>
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<th>Course</th>
<th>FALL</th>
<th>WINTER</th>
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<tr>
<td>Theory of Structures II, III (C.E. 401, 402)</td>
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<td>Structural Design I, II, III (C.E. 411, 412, 413)</td>
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<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>
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<tr>
<td>Electrical Engineering I, II, III (E.E. 301, 302, 303)</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Engineering Law (E. 403)</td>
<td>-</td>
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<td>Social Science Elective**</td>
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**See Page 144 for details.

ELECTRICAL ENGINEERING

PROFESSOR KLINGENBERGER, LECTURER ALDEN, MR. CARMEAN

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 starts 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. 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 equipped with a wide variety of test equipment, numerous bridge-type instruments, portable cathode ray oscillographs, 4-element recording oscillographs, and analog computer.

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.

See page 137 for the program of the Freshman and Sophomore years.

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<tr>
<td>Alternating Current Circuits I, II and Communication</td>
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<tr>
<td>Circuits I (E.E. 311, 312, 313)</td>
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<tr>
<td>Engineering Analysis and Electronics I</td>
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<tr>
<td>(E. 301, E.E. 323)</td>
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<tr>
<td>Statics &amp; Mechanics of Materials I (C.E. 301, 302)</td>
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<tr>
<td>Thermodynamics, Dynamics, and Heat Transfer</td>
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<tr>
<td>(M.E. 301, 322, 303)</td>
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<tr>
<td>Nuclear Physics (403)</td>
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<td>Humanities Elective**</td>
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**SENIOR YEAR**

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<th>Course</th>
<th>FALL</th>
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<tr>
<td>Communication Circuits II and Electric and</td>
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<td>Magnetic Waves (E.E. 411, 412)</td>
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<td>Electronics II, III, IV (E.E. 421, 422, 423)</td>
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<td>Electrical Machinery I, II, III (E.E. 431, 432, 433)</td>
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<td>Transient Circuits, Automatic Control Systems I, II</td>
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<td>(E.E. 441, 442, 443)</td>
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**See Page 144 for details.**

**MECHANICAL ENGINEERING**

ASSOCIATE PROFESSOR JENNINGS, PROFESSOR HROLDT, and ASSISTANT PROFESSOR BURTON

Mechanical Engineering is a general term which may include the specialized fields of Applied Mechanics, Automotive Engineering, Heat Transfer, Machine Design, Materials Handling, Power, Production Engineering, and many others.

The mechanical engineer today is faced with such vital problems as space flight, automation, ever greater demands on the use of existing materials and mechanisms in missiles, automotive, electronic, and other fields, and the design of equipment necessary to produce them.
In order to meet this challenge, the mechanical engineer must have a thorough knowledge of fundamental scientific principles and be adept in the use of mathematics. In addition, he must develop his creative ability. To complete his technical education, he must acquire knowledge of certain manual arts such as materials processing and the instrumentation and testing of a wide range of materials, machines, and equipment such as internal combustion engines, heat transfer apparatus, etc.

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.

Performance test of a turbo-blower (cradle dynamometer). This type of blower is used where high velocities and high efficiencies are needed.
The Steam Power Laboratory has a steam boiler, pump, engine, and two turbines with other necessary accessories for tests of each unit. The Engine Laboratory contains dynamometers for automotive engines and a single cylinder test engine. In addition, there are several Diesel-generator sets available for testing and research work. The Heating and Ventilating Laboratory contains space heating systems and accessories. The Fluids Laboratory consists of fans, blowers, compressors, and pumps; fuel and lubricant test facilities are also provided.

See page 137 for the program of the Freshman and Sophomore years.

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course Description</th>
<th>FALL</th>
<th>WINTER</th>
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<tr>
<td>Statics and Mechanics of Materials I, II (CE 301, 302, 303)</td>
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<tr>
<td>Thermodynamics I, II, III (ME 311, 312, 313)</td>
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<tr>
<td>Engineering Analysis, Dynamics and Kinematics (E 301, ME 322, 323)</td>
<td>3</td>
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<td>4</td>
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<tr>
<td>ME Laboratory I, II, III (ME 331, 332, 333)</td>
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<td>1</td>
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<tr>
<td>Fluid Mechanics and Heat Transfer I, II (ME 341, 342, 343)</td>
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<tr>
<td>Humanities Elective**</td>
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### SENIOR YEAR

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<tr>
<td>Mechanical Design I, II, III (ME 411, 412, 413)</td>
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<tr>
<td>Mechanical Vibration, Gas Dynamics, Control Systems (ME 421, 422, 423)</td>
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<td>4</td>
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<tr>
<td>ME Laboratory IV, V, VI (ME 431, 432, 433)</td>
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<tr>
<td>Electrical Engineering I, II, III (EE 301, 302, 303)</td>
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<tr>
<td>ME Option* - Internal Combustion Engines, Air Conditioning, Turbomachines, Heat Power, Tool Engineering, Nuclear Physics (ME 410, 420, 430, 440, 450, Phys. 403)</td>
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<td>3</td>
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<tr>
<td>Social Science Elective**</td>
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* Majority of the M.E. seniors or 10 (whichever is smaller) must choose one of the M.E. courses in order for it to be offered.

** 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. Eighteen of these hours must be in social science and nine, in humanities outside of Philosophy and Religion.
Description of Courses

GENERAL ENGINEERING

100. HIGH SCHOOL REFRESHER FOR BEGINNING ENGINEERING STUDENTS.  
     No credit

     For a period of three weeks, five days per week, eight hours per day,  
     a review of high school mathematics, that which is necessary to start the  
     college mathematics, is offered previous to the opening of the Fall Quarter.  
     All beginning freshmen find the systematic review of value in getting started  
     in the college mathematics. The course includes topics in algebra, geometry,  
     and trigonometry.

     Students who do not place sufficiently high on mathematics placement  
     tests during Summer Orientation are required to take this course during  
     the Fall Quarter.

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 prep-  
     arations, problem solutions, taking of tests, slide rule, background of various  
     branches of engineering, technical and professional organizations, 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. ENGINEERING GRAPHICS I. (1+6)  3 hours

     Use of instruments, applied geometry, lettering, orthographic projection,  
     sketching, pictorial drawing, dimensioning.

112. ENGINEERING GRAPHICS II. (1+6)  3 hours

     Continuation of E. 111. Machine elements, working drawings, welding  
     symbols, nomographs. Projects in the main fields of engineering are used.  
     Prerequisite: E. 111.

113. ENGINEERING GRAPHICS III. (1+6)  3 hours

     Descriptive Geometry, advanced orthographic projections, problems of  
     point, line, plane and curved surfaces, developments, intersections and  
     perspective.  
     Prerequisite: E. 111.

*Note: (1 + 0) indicates one hour lecture per week and 0 indicates the  
number of hours spent in laboratory per week.
201. PROFESSIONALISM I. (1+0) 1 hour
Continuation of Orientation of Engineering Students supplemented with lectures by practicing Professional Engineers.

202. PROFESSIONALISM 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 Mathematics 223.

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, parents, and expert testimony are included.

CIVIL ENGINEERING

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

Prerequisite: Mathematics 131.
213. **SURVEYING II. (3+6)**

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.

221. **GEOLGY. (3+0)**


**Prerequisite:** General Chemistry.

301. **STATICS. (4+0)**

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.

**Prerequisite:** Mathemarics 223 and Physics 241.

302. **MECHANICS OF MATERIALS I. (4+3)**

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.

**Prerequisite:** C.E. 301.

303. **MECHANICS OF MATERIALS II. (5+0)**

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.

**Prerequisite:** C.E. 302.

313. **THEORY OF STRUCTURE I. (3+0)**

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.

**Prerequisite:** C.E. 303 or concurrent therewith.

322. **FLUID MECHANICS. (4+3)**

Mechanics of compressible and incompressible liquids, fluid statics, flow and measurement of fluids in pipes and open channels, and hydraulic machines. Laboratory.
Prerequisite: C.E. 301.

323. HIGHWAYS AND TRANSPORTATION. (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, airports, waterways, docks and harbors.
Prerequisite: C.E. 213 and C.E. 221.

331. 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.

333. PLAIN CONCRETE. (1+3) 2 hours

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.
Prerequisite: C.E. 313.

402. THEORY OF STRUCTURES III. (3+0) 3 hours
Statically indeterminate structures.
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 and timber roof trusses and make drawings of same.
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.
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. Williot-Mohr diagrams for truss deflection.

420A 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 suspen-
tion 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. 313.

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.
Prerequisite: C.E. 221 and C.E. 303.

432. WATER SUPPLY AND 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, 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.

^ Taught upon sufficient demand.
ELECTRICAL ENGINEERING

213. ELECTRIC AND MAGNETIC CIRCUITS. (4+3) 5 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.
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.
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.
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, series and parallel circuits, resonance phenomena 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. Coupled circuit, balanced and unbalanced polyphase circuits, polyphase power measurements, symmetrical components, and nonsinusoidal waves. Lectures, recitations, computing, and laboratory periods.
Prerequisite: E.E. 311.

313. COMMUNICATION CIRCUITS I. (4+0) 4 hours
This is a course in the theory and analysis of communication circuits. Tuned coupled circuits, impedance transformation, matrix representation and filters are studied. Lectures and recitations.
323. ELECTRONICS I. \((4+3)\)  
5 hours
This is a course in the theory of electron flow in vacuum tubes and solid state devices. Electron ballistics, the cathode-ray tube, charge behavior in materials, emission of electrons, diodes, power supplies, four terminal networks, the triode, the pentode, the transistor, and equivalent circuits are studied.

Prerequisite: E.E. 312.

411. COMMUNICATION CIRCUITS II. \((3+3)\)  
4 hours
A continuation of Communications Circuits I. Theory and analysis of transmission lines. Topics covered include traveling waves, reflections, impedance matching by open and shorted stubs, transmission line charts and power lines. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 313.

412. ELECTRIC AND MAGNETIC WAVES. \((5+0)\)  
5 hours
A study of the fundamentals of electromagnetics. Time-varying electric and magnetic fields, Maxwells equations, plane waves in dielectric and conducting media, and waveguides are studied. Lecture and recitations.

Prerequisite: E.E. 411.

421. ELECTRONICS II. \((3+0)\)  
3 hours
A continuation of Electronics I. The topics studied include small-signal amplifiers, feedback, direct-coupled amplifiers, and the audio-frequency amplifier with large signals.

Prerequisite: E.E. 323.

422. ELECTRONICS III. \((3+3)\)  
4 hours
A continuation of Electronics II. The topics studied include the radio frequency amplifier, oscillators, modulation, and demodulation.

Prerequisite: E.E. 421.

423. ELECTRONICS IV. \((3+3)\)  
4 hours
A continuation of Electronics III. The topics studied include wave-shaping circuits, gaseous conduction, power rectification, gaseous control tubes and circuits, and photoelectric devices.

Prerequisite: E.E. 422.

431. ELECTRICAL MACHINERY I. \((3+3)\)  
4 hours
This is a course in the theory, application, operating characteristics, and control of direct-current machinery. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 213.

432. ELECTRICAL MACHINERY II. \((3+3)\)  
4 hours
A comprehensive study of the theory and performance of the alternator, the induction motor, and the transformer. Lectures, recitations, computing, and laboratory periods.

Prerequisite: E.E. 312.
433. ELECTRICAL MACHINERY III. (4+3)  5 hours
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.
Prerequisite: E.E. 432.

441. TRANSIENT CIRCUITS. (4+0)  4 hours
Prerequisite: E.E. 312 and E. 301.

442. AUTOMATIC CONTROL I. (3+0)  3 hours
This is a course in closed-loop systems performance from equations and transfer-function plots. Lectures and recitations.
Prerequisite: E.E. 441.

443. AUTOMATIC CONTROL II. (2+3)  3 hours
A continuation of Automatic Control I. Topics studied include: gain adjustment, series compensation, parallel compensation, and logarithmic method of analysis. Lectures, recitations, computing, and laboratory 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 student.

462B and 463B ADVANCED ELECTRICAL LABORATORY I & II.  3 hours
Senior year. Special laboratory problems and investigations are intricate 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

201. METALLURGY (3+0)  3 hours
Introduction to structure and properties of metals and alloys. Effects of diffusion, corrosion, heat treatment, et cetera.
Prerequisite: Chemistry 113 or 123.

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

Prerequisite: E. 211, E. 212, and E. 213 or concurrent therewith.

203. MACHINE DRAWING. (1+3)
2 hours
Intended to develop the student's ability to carry out all phases of communicative development from the creation of an idea to producing complete working drawings in a professional manner.

Prerequisite: E. 112, 113, and M.E. 202.

301. THERMODYNAMICS. (4+0)
4 hours
For non-mechanicals. Fundamentals and basic applications of thermodynamics.

Prerequisite: Chemistry 113, Mathematics 223, and Physics 243.

305. HEAT TRANSFER. (3+0)
3 hours
For non-mechanicals. Fundamentals and basic applications of heat transfer.

Prerequisite: Physics 243.

311. THERMODYNAMICS I. (4+0)
4 hours
Fundamentals of thermodynamics: first and second laws and their consequences.

Prerequisite: Physics 243.

312. THERMODYNAMICS II. (2+0)
2 hours
Application of thermodynamics to machines, power, and refrigeration cycles. (Formerly part of M.E. 311).

Prerequisite: M.E. 311.

313. THERMODYNAMICS III. (3+0)
3 hours
Advanced topics: fluid flow, generalized relations, combustion, and equilibrium.

Prerequisite: M.E. 312.

322. DYNAMICS. (5+0)
5 hours
Friction, rectilinear and rotary motion, kinetics of bodies under uniform and variable rectilinear and rotational acceleration, work; energy, momentum, impulse, and impact.

Prerequisite: C.E. 301.

323. KINEMATICS OF MACHINES. (3+3)
4 hours
The study of mechanisms and their motion. Methods of determination of displacement, velocity, and acceleration of elementary machine components including gears, cams, etc.

Prerequisite: M.E. 322.

331. MECHANICAL LABORATORY I. (0+3)
1 hour
First course of a series of six. Measurements, instrumentation, calibrations, testing of materials and equipment, preparation of technical reports.
Concurrent with M.E. 301 or 311.

Prerequisite: Physics 243.

332. MECHANICAL LABORATORY II. (0+3) 1 hour
Continuation of M.E. 331. Fluid Mechanics Laboratory.

333. MECHANICAL LABORATORY III. (0+3) 1 hour
Continuation of M.E. 332. Instrumentation and materials testing.

341. FLUID MECHANICS. (3+0) 3 hours
Theoretical: fluid statics and dynamics, friction, dimensional analysis, and potential flow. (Formerly M.E. 312).

Prerequisite: Physics 243.

342. HEAT TRANSFER I. (3+0) 3 hours
Conduction heat transfer, steady and unsteady, including numerical and graphical methods of analysis. Radiation heat transfer. (Formerly part of M.E. 313).

Prerequisite: Physics 243 and Mathematics 223.

343. HEAT TRANSFER II. (3+0) 3 hours
Convection heat transfer: forced, free, with phase change. Heat exchangers and an introduction to high speed flow and mass transfer. (Formerly part of M.E. 313).

Prerequisite: M.E. 341 and 342.

400C 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. (Formerly M.E. 450).

410C. INTERNAL COMBUSTION ENGINES. (3+0) 3 hours
Fundamentals of spark—and compression—ignition engines and internal combustion processes. (Formerly M.E. 422).

Prerequisite: M.E. 313.

411. DESIGN OF MACHINE ELEMENTS I. (3+3) 4 hours
Calculation and analytical study of the design of functional machine elements such as shafts, bearings, fasteners, gears, clutches, couplings, etc., as well as the preparation and execution of drawings according to professional standards.

Prerequisite: M.E. 323 and C.E. 303.

412. DESIGN OF MACHINE ELEMENTS II. (3+3) 4 hours
A continuation of M.E. 411.

Prerequisite: M.E. 411.

413. MACHINE DESIGN. (3+6) 5 hours
Complete design and layout of a machine or unit as used in a particular industrial branch of mechanical engineering including in the design the
previously studied elements and mechanisms, in order to develop engineering judgment and professional proficiency from the original conception of an idea to the finished product.

Prerequisite: M.E. 312.

420C. AIR CONDITIONING. (3+0) 3 hours
Estimating loads, heating systems and equipment, refrigerating systems and equipment, ducting and air conditioning.
Prerequisite: M.E. 313 and 342.

421. MECHANICAL VIBRATION. (4+0) 4 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. 422).
Prerequisite: M.E. 322.

422. GAS DYNAMICS. (4+0) 4 hours
Simple flows: isentropic, diabatic and friction. Shock phenomena and generalized 1-dimensional flow. Introduction to thermochemistry. (Formerly M.E. 441).
Prerequisite: M.E. 313 and 343.

423. CONTROL SYSTEMS. (3+0) 3 hours
Automatic feedback control systems; servomechanisms and process controls.
Prerequisite: M.E. 322 and 343.

430C. TURBOMACHINES. (3+0) 3 hours
Velocity vector, energy relationships, and similarity parameters for fans, pumps, compressors, turbines, fluid couplings, and torque converters. (Formerly M.E. 442).
Prerequisite: M.E. 422.

431. MECHANICAL LABORATORY IV. (0+3) 1 hour
Laboratory periods of 3 hours each applied to tests of blowers, compressors, pumps, engines (steam, gasoline, Diesel), steam turbines, heating and refrigeration units, steam power plants, and related equipment.

432. MECHANICAL LABORATORY V. (0+3) 1 hour
Continuation of M.E. 431.

433. MECHANICAL LABORATORY VI. (0+3) 1 hour
Continuation of M.E. 432.

440C. HEAT POWER. (3+0) 3 hours
Modern power plants and equipment; heat balances. An introduction to supercritical and nuclear power plants. The economics of power systems. (Formerly M.E. 463).
Prerequisite: M.E. 313 and 343.
450C. TOOL ENGINEERING. (2+3) 3 hours

Optional. An engineering study involving economic principles in the design, building and use of tools, dies, jig and fixtures, including measuring and gaging devices as used in mass production. Emphasis is also given to estimating and processing of simple and complex production parts, as well as the preparation of conventional shop drawings. (Formerly M.E. 473).

Prerequisite: M.E. 412.

c: Taught upon sufficient demand.
College of Pharmacy

ALBERT C. SMITH, Dean

Ohio Northern University College of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.
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

Students entering pre-pharmacy should have at least three years but preferably four years of English, two years of mathematics (algebra and plane geometry) but preference will be given to students with advanced credit. Two to three years of science (biology, general science and chemistry or physics or both) preference will be given to students with four years of science subjects.

Freshmen, upon entering the pre-pharmacy program, prior to the registration, will be given entrance examinations in English and Mathematics.

REQUIREMENTS FOR ADMISSION TO THE COLLEGE OF PHARMACY

1. The applicant must have at least forty-five (45) term hours or thirty (30) semester hours of credit with an accumulative point average of 2.0 (C average) to enter the College of Pharmacy.

2. 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.

3. 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 and requested to carry a reduced schedule. After one quarter on probation, the student who fails to improve his standing will be subject to suspension.

After once being suspended for a period of not less than two academic quarters, a student may apply for re-admission. Upon re-admission, students will be placed on probation and must make a 2.0 point or better each term and must bring their accumulative point average up to 2.0 or be subject to permanent dismissal.

A student placed on warning or suspension may be continued on warning (C.W.) or continued on probation (C.P.) if the term following one of the above actions a 2.0 point or better is made. Students who fail to obtain a 2.0 point or better average when on continued probation will be subject to suspension.

Students placed on suspension may have their case reviewed by the academic council. If allowed to re-enter, they must make better than a 2.0 point average the following term. Students failing to do so, will be subject to dismissal for a period of three quarters or one academic year. Students who are subject to permanent dismissal, may have their case reviewed by the Academic Council.

(All conditions of warning, probation, suspension and dismissal are recommended by the faculty of the College of Pharmacy. The President of the University has the final action on all cases of suspension and dismissal.)
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. Under the five year plan a total of two hundred and twenty term hours plus six quarters of physical education are required for graduation. Note under scholarship rating the quality point requirements. A 2 quality point average is needed for graduation. The candidate must be present at the commencement exercises unless officially excused.

Each candidate for a degree must successfully pass an English Proficiency Test and maintain an accumulative point average of 2.1 in all required major courses of Pharmacy, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology and Pharmacy Administration as a pre-requisite for graduation.

QUALIFICATIONS FOR EXAMINATION AND REGISTRATION AS A PHARMACIST

Every student shall:
A. Be a citizen of the United States, or shall have made application therefor;
B. Be not less than twenty-one years of age;
C. Be of good moral character and habits;
D. Be a graduate from a school or college of pharmacy or a department of pharmacy of a university recognized and approved by the State Board of Pharmacy and have completed at least the minimum course in pharmacy as outlined by the American Council on Pharmaceutical Education.
E. File proof to the Board, substantiated by proper affidavits of a minimum of one year's internship under the personal supervision of a registered pharmacist. Credit for internship may be granted only if obtained when the intern is not enrolled and in attendance in a college or university. Internship credit may not be given until the completion of one year in a college or university.

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.

PROPOSED FIVE YEAR PHARMACY PROGRAM

The following proposed plan is suggested for this degree at Ohio Northern:

Total hours required for graduation are: Two hundred and twenty (220) term hours plus six (6) terms or quarters of physical education.

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<td>Chemistry 213</td>
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<tr>
<td>Physics 223</td>
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<tr>
<td>Philosophy Core C-33*</td>
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<tr>
<td>or Ethics 203*</td>
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<tr>
<td>Physical Education</td>
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<tr>
<td>Chemistry 212</td>
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<tr>
<td>Physics 222</td>
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<tr>
<td>Biology 112</td>
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* If either of these programs, that is, Philosophy Core C-31, C-32 and C-33 or the sequence of Philosophy 201, Logic 202 and Ethics 203 are once started, the student must continue in the same sequence for the full year to receive credit.

### THIRD YEAR

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<tbody>
<tr>
<td>Pharmacognosy 211</td>
<td>Pharmacy 220</td>
<td>3</td>
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<tr>
<td>Pharmaceutical Chem. 321</td>
<td>First Aid 112</td>
<td>3</td>
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<tr>
<td>Accounting 131</td>
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<td>3</td>
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<tr>
<td>Elective</td>
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<tr>
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<tbody>
<tr>
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<tr>
<td>Pharmaceutical Chem. 323</td>
<td>Pharmacy 210</td>
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<tr>
<td></td>
<td>Speech 271</td>
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<tr>
<td>Pharmacognosy 212</td>
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<tr>
<td>Pharmaceutical Chem. 322</td>
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**Note:** Pharmacy 220, Accounting 131, First Aid 112, and Speech 271 will be offered each term. Classes will be limited in number.

### FOURTH YEAR

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<tr>
<td>Pharmacy 301</td>
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<tr>
<td>Physiology 331</td>
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<tr>
<td>Bacteriology 321</td>
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<tr>
<td>Biochemistry 341</td>
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<tr>
<td>Pharmacy Admin. 310*</td>
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<tr>
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<tr>
<td>Physiology 333</td>
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<tr>
<td>Bacteriology 323</td>
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<td>Biochemistry 343</td>
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<td>Pharmacy Admin. 420*</td>
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<td>Physiology 332</td>
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<td>Bacteriology 322</td>
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<td>Biochemistry 342</td>
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* Pharmacy Administration may be taken during the fourth year. Pharmacy Administration courses 310, 410, and 420 will be scheduled each quarter.

### FIFTH YEAR

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<tbody>
<tr>
<td>Pharmacy 401</td>
<td>Pharmaceutical Chem. 432</td>
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<tr>
<td>Pharmacology 421</td>
<td>Elective</td>
<td>3</td>
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<tr>
<td>Pharmaceutical Chem. 431</td>
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<td>17</td>
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<tr>
<td>Elective</td>
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<td>Pharmacology 423</td>
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<td>Pharmaceutical Chem. 433</td>
<td>Pharmacy 440</td>
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<td>Pharmacy 402</td>
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<td>Pharmacology 422</td>
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</table>
Electives: All elective courses prior to the third term of the fourth year in college must be elected either from the divisions of humanities, natural sciences, or social sciences in the liberal arts college and approved by the department involved and Dean of the College of Pharmacy.

Students planning to enter graduate school should elect a modern language (German, French, Russian); if a major in chemistry is desired, more mathematics should be elected.

Professional Electives may be selected from the following group:

- Advanced First Aid 113 3 Pharmacy 411 2
- Pharmacognosy 411 2 Pharmaceutical Chemistry 410 2
- Pharmacognosy 413 2 or 3 Virology 423 2
- Pharmacology 430 2 Parasitology 413 2

All 450 courses are "Problem Courses" and are given in Bacteriology and five 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.

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**BACTERIOLOGY LABORATORY**

**BACTERIOLOGY**

123. INTRODUCTORY BACTERIOLOGY. 3+2  
A course in the fundamentals of general and medical microbiology for students in the nursing program.  
4 hours  
Dr. Lepovetsky
321. **General Bacteriology.** 3+3  
A general course in the fundamentals of microbiology with emphasis on those points of special interest in the pharmaceutical industry.  
**Dr. Lepovetsky**

322. **Immunology and Pathogenic Bacteriology.** 3+3  
The basic principles of immunity and pathogenicity are considered. The more common bacterial infections of man and domestic animals are discussed together with methods used to prevent and treat them.  
**Dr. Lepovetsky**

323. **Pathogenic Microbiology.** 3+3  
A continuation of 322. The more common viral, rickettsial, fungal and protozoal infections are studied.  
**Dr. Lepovetsky**

413. **Parasitology**  
(e) 2 hours  
The principal helminthic infestations of man and domestic animals are discussed.  
**Prerequisite:** Bacteriology 322.  
Given in odd years only.  
**Dr. Lepovetsky**

423. **Virology**  
(e) 2 hours  
Viral and rickettsial infections of man are studied.  
**Prerequisite:** Bacteriology 322.  
Given in even years only.  
**Dr. Lepovetsky**

450. **Bacteriology Problems**  
(e) 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

See requirements elsewhere in this catalog under English Courses, page 78. Read under 131, 132, 133 Literature and Writing.

All students must complete one year of college English and one term of Public Speaking. Vocabulary Studies, and Business Communications are recommended as electives.

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 so 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.

All students are required to take First Aid 112.

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

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.

A student showing a high proficiency in Mathematics on the entrance examination may be recommended to take Mathematics 121, 122, 132. The student thus, may choose Mathematics 111, 112, 113, or the five-hour credit courses of Mathematics 121, 122, 132.

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
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, 123.

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, alcoholometric and polarimetric means. Laboratory exercises are used to emphasize these determinations.
Prerequisites: Chemistry 111, 112, 123.

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. 5+0 ..... 5 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, incompatibil-
432. INORGANIC AND ORGANIC CHEMICALS. 5+0 5 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. 5+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

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-protoplasmic 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, 123 and Chemistry 111, 112, and 123.
Dr. Koffler

212. GENERAL PHARMACOGNOSY 2. 3+3 4 hours
A continuation of General Pharmacognosy 211.
Dr. Koffler

213. GENERAL PHARMACOGNOSY 3. 3+3 4 hours
A continuation of General Pharmacognosy 211 and 212. In addition, the fundamentals of antibiotics, herbicides, insecticides and rodenticides are studied.
Dr. Koffler
PHARMACOGNOSY LABORATORY

411. REVIEW OF CURRENT PHARMACOGNOSY LITERATURE. 2+0

A review of recent literature, books, and articles in the field of Pharmacognosy.

(El) 2 hours

Dr. Koffler

413. ALLERGENIC PLANTS, ALLERGY AND ALLERGENS. 2+0 or 2+3

A study of plants causing allergies and of the mechanism of allergy. Pollen and mold spore counts are made.

(El) 2 or 3 hours

Dr. Koffler

430. SPECIAL PHARMACOGNOSY METHODS. 1+6

(One class period and two 3-hour lab. periods)

Microscopical and microchemical methods of evaluation, isolation and identification of crude drug constituents are studied.

(El) 3 hours

Dr. Koffler

450. PHARMACOGNOSY PROBLEMS

A special problems course. Small research projects in Pharmacognosy are carried out. Students may also work on problems of cultivation of medicinal plants.

(El) 1 to 3 hours

Dr. Koffler

PHARMACOLOGY

133. PHARMACOLOGY. 3+2

An elementary general course in Pharmacology for students in the nursing program.

3 hours

Mr. Gorby

421. PHARMACOLOGY. 4+3

Introduction, vocabulary, and terminology used in pharmacology are discussed. The cathartics, cholagogues, choleretics, antacids, digestants, an-
thelminitics, local anti-infectives, sulfonamides and related compounds, antibiotics, and biological preparations are considered. Experiments shall be related to the lectures of this quarter.

Prerequisite: Physiology 351 and 332, Chemistry 211, 212, and 213, and Bacteriology 321.

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422. Pharmacology 422. 4+3
A study of local anesthetics, drugs acting on the central nervous system, drugs acting on the autonomic nervous system, and drugs acting on striated muscle. Experiments shall be related to the lectures of this quarter.

Prerequisite: Pharmacology 421.

423. Pharmacology 423. 4+3
A study of histamine and anti-histaminics, drugs acting on blood and hematopoietic system, hormones and drugs acting on endocrine glands, cardiovascular drugs, diuretics, vitamins, diagnostic aids and amebicides. Experiments shall be related to lectures, half of laboratory time is devoted to use of pharmacologic technique in the identification of various pharmacological unknowns.

Prerequisite: Pharmacology 422.

430. Pharmacology (Toxicology). 2+0
The general Principles of Toxicology. The toxic effects, symptoms and antidotal 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.
PHARMACY

PHARMACY ORIENTATION 1 AND 2.  1 hour per term
This course is designed to assist new students in orientating themselves into college courses, to understand the value and use of the library. It also will acquaint the student with the pharmacy curriculum so that he becomes more interested in the profession as well as explains the value of choosing the proper electives so that he will be better prepared for the area of the profession he plans to follow.

The course will also help to acquaint the students with the various national associations and try to develop an interest as well as the value of becoming an active member in state and local associations.

The student will also be instructed as to the value of continuing his education for advanced degrees and the value of continuing his education by attendance at refresher courses.

An introduction as to the legal and professional responsibilities will be discussed.

210. INTRODUCTION TO PHARMACY. 3+3  4 hours
A beginning professional course designed to present the theories, terminology, and techniques considered basic to an understanding of pharmacy.

Prerequisites: Chemistry 111, 112, 113, 123, 211, 212 and 213; Pharmacy 220.

DR. NEWCOMB

220. PHARMACY ARITHMETIC. 3+0  3 hours
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  4 hours
The course includes the preparation and study of aqueous, hydroalcoholic and alcoholic solutions and suspension liquids official in the U. S. Pharmacopoeia and National Formulary. Emphasis is given to correct procedures, to packaging and labeling.

Prerequisites: Pharmacy 210 and 220.

DR. NEWCOMB

302. PHARMACEUTICAL PREPARATIONS 2. 3+3  4 hours
A continuation of Pharmacy 301 and includes the making of solid and semisolid products such as tablets, capsules, ointments, suppositories and related items.

Prerequisites: See course 301 above.

DR. NEWCOMB

320. HISTORY OF PHARMACY. 3+0  3 hours
The course is designed to show the place of pharmacy in western civilization from ancient to modern times. Emphasis is given to the development and organization of pharmacy in the United States.

Prerequisites: Pharmacy 301 and 302.

DR. LEE
330. COSMETICS. 2 + 3
Formulation, preparation, and packaging of the more common types of
Cosmetic products.
Prerequisites: Pharmacy 210, 301 and 302.
Dr. Lee

401. PHYSICAL PHARMACY. 3 + 3 4 hours
Precision and accuracy. Theory of isotonic and buffered solutions. Inter-
Precision and accuracy. Theory of isotonic and buffered solutions. Inter-
facial phenomena. Rheology of dispersions. Micromeritcs. Flavors, per-
fumes, colors. Decomposition sinetics and drug stabilization.
Dr. Araujo

402. PRESCRIPTION PRACTICE. 3 + 3 4 hours
The Prescription: Pricing, compounding procedures. Powdered dosage
forms (tablets, capsules, pills, lozenges). Commercial specialties (manu-
facturers, generic names, dosage forms, pharmacological categories).
Dr. Araujo

403. PRESCRIPTION PRACTICE. 3 + 3 4 hours
Percentage solutions. Ophthalmic solutions. Ointments, emulsions, sus-
pensions, and suppositories. Chemical, physical, and therapeutic incomp-
atabilities. Commercial specialties (manufacturers, generic names, dosage
forms, pharmacological categories).
Dr. Araujo

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.

440. ADVANCED SURVEY. 3 + 0 3 hours
A technical survey of the latest U.S.P. and N.F. prerequisites. The cor-
relation 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 and Staff

450. Pharmacy Problems. (31) 1—3 hours
The course is designed for qualified seniors who are interested in research.

Dr. Araujo, Dr. Newcomb and Dr. Lee

PHARMACY ADMINISTRATION

131. Principles of Accounting. 3+0 3 hours
See Department of Economics, College of Liberal Arts for description.

Mrs. Ritz

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.

Mr. Benton

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.

Mr. Benton

420. Drug Marketing. 3+0 3 hours
A study of the marketing of drugs and drug products. Emphasis is from the manufacturer's and wholesaler's standpoint rather than from the retailer's point of view. The laws governing commercial manufacture, distribution, and the various fair practices acts, as they pertain to pharmacy, are discussed.

Mr. Benton

450. Pharmacy Administration. (el) 1—3 hours
A course in research problems concerning Drug Store Management, Drug Marketing, or Pharmaceutical Jurisprudence. Open to juniors and seniors.

Mr. Benton

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 under the five-year plan will be required to take Physics 221, 222 and 223 or their equivalents. 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

EUGENE N. HANSON, 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
The courses in the College of Law are planned primarily to prepare students for the practice of law. However, 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 a foundation for 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 educating 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.

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 15 of this catalogue.
BEGINNING LAW STUDENTS

Students who are commencing the study of law are admitted only at the beginning of the fall quarter.

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. He will learn something of the nature of the profession into which he proposes to enter, and 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 functions of the trial court and the appellate opinion in the judicial process. The lectures commence at nine o'clock on Wednesday morning 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. Yearly dues are five dollars. The organization has full membership in the American Law Student Association, affiliated with the American Bar Association.

Delta Theta Phi and Phi Alpha Delta, national law school fraternities, are represented by chapters in the College of Law.

NATIONAL MOOT COURT COMPETITION

The College of Law is eligible to enter a team each year in the National Moot Court Competition, and encourages such 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. 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 6-7.

Candidates of good moral character may be admitted upon satisfying the following requirements:

(1) Graduation from a first-grade high school and
(2) An undergraduate bachelor's degree from an approved college.
(3) The submission of the applicant's score on the Law School Admission Test which is given periodically by the Educational Testing Service of Princeton, New Jersey.

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 Dean of the College of Law for an application blank.

ADVANCED STANDING. Upon approval of the Dean of the College of Law, advanced credit is given for not more than two years of satisfactory law study in residence at any law school approved by the American Bar Association.

SPECIAL STUDENT. Persons 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. Anyone desiring to enter as a special student or to secure fuller information in regard to preliminary education should write to the Dean of the College of Law. Such special students may 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 $30.00, which is payable shortly before the examination.

PRE-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.

For further information about these courses, the student is referred to
the Liberal Arts section of this catalog.

**GRADUATION**

A degree of Bachelor of Laws is conferred on all students with nine
quarters of residence who have taken a total of 124 hours with an accumu-
lative average of 66, plus completing Legal Bibliography, Legal Ethics,
Moot Court and Practice Court I and II to the satisfaction of the instructor.
In lieu of Practice Court I and II the student is allowed to take two extra
credit hours. Those who have received credit from another college of Law
in accordance with the section ADVANCED STANDING must have studied
in residence in this college for at least three quarters immediately preceding
graduation.

An average of 66 for each year of work is required to remain in attend-
ance and an accumulative average of 66 is required for graduation. An
exception will be made in the case of a senior who fails to make an average
of 66 in his senior year’s work. He will not be dismissed, but he will be
permitted to take further work in order to bring his average for his senior
work, plus the additional work, up to 66. This must be done within a
reasonable time.

**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 except in unusual cases.

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 from courses,
   warning and probation, eligibility for extra-curricular activities, examin-
   ations.

4. Expenses, tuition, fees, living costs, and housing are likewise de-
   scribed 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 an average of 66; for third year standing, eighty credit
hours and an average of 66.
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. The right is reserved to make such changes in the curriculum and the order in which courses may be given as may be necessary.

<table>
<thead>
<tr>
<th>FALL QUARTER</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Legal History</td>
<td>3</td>
<td>Real Property I</td>
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<tr>
<td>Contracts I</td>
<td>4</td>
<td>Torts II</td>
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<tr>
<td>Personal Property</td>
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<tr>
<td>Torts I</td>
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<td>Legal Bibliography</td>
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<tr>
<th>SECOND YEAR</th>
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<tr>
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<tr>
<td>Constitutional Law I</td>
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<td>Equity</td>
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<tr>
<td>Procedure I</td>
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<td>Legal Writing</td>
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<td>Electives</td>
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<tr>
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<td>Legal Ethics</td>
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<td>Electives</td>
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<tr>
<td>WINTER QUARTER</td>
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<tr>
<td>Trusts</td>
</tr>
<tr>
<td>Practice Court II</td>
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</tbody>
</table>

*Courses are required for graduation but no credit hours are given toward the 124 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. Seavey and Hall, Cases on Agency.

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 and Wellington, 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. Harno, Cases On Criminal Law and Procedure.

LEGAL HISTORY 3 hours
The course will cover essential points of the history of the development of common law and equity, including the origin of the system of writs, the post-conquest history of the judicial system, the position of the chancellor, the contributions of commentators and the growth of law in England with respect to the general context of the growth of the executive, administrative and legislative system. The forms of action at common law will receive particular attention and cases illustrating the various forms of action at common law will be studied. McBaine, Introduction to Civil Procedure.

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*.

**PERSONAL PROPERTY**

4 hours


**REAL PROPERTY I**

5 hours

This course treats of the historical origin of land law, tenure, seizin, the differentiations of estates in land, titles and their transfer by act of the parties and operation of law. Casebook same as in Personal Property.

**REAL PROPERTY II**

5 hours

This course deals with air and water rights, support, easements, covenants running with the land, rents, profits, waste, and public rights. Casebooks same as in Personal Property.

**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 special attention given to 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 on Torts*.

**Moot Court**

1 hour

This course is required but no credit is given for it toward graduation. First year students are required to participate in an appellate court argument. The written briefs and the oral argument are based on a fact situation and a lower court decision which is supplied by the instructor.

**LEGAL WRITING**

2 hours

Each member of the second year class will be required to prepare a legal research paper of the length and quality of a law review comment.
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 JUDGEMENTS  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  3 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.

CONSTITUTIONAL LAW I  3 hours

CONSTITUTIONAL LAW II  3 hours

Courses include the interpretation of the constitutional limitations for

**EQUITY**

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 Equity* (4th Edition).

**EVIDENCE**

An examination of contemporary rules of evidence relating to burden of proof and presumption, judicial notice, the examination of witnesses, competency and privilege, and illegally obtained evidence, followed by a careful development of the opinion rule, the hearsay rule and its exceptions, and the best evidence rule. McCormick, *Cases on Evidence* (2nd Edition).

**PRIVATE CORPORATIONS**

This course treats of the characteristics of private corporations, including 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. Lattin and Jennings, *Cases and Materials on Corporations* (3rd Edition).

**LEGAL WRITING**

Each member of the second year class will be assigned to one of the faculty members who will supervise the preparation of a legal research paper. This course must be completed to the satisfaction of the instructor but no credit toward the 119 hours required is allowed.
THIRD YEAR

Required Courses

LEGAL ETHICS
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. Pirsig, *Cases on the Legal Profession*.

1 hour

TRUSTS

5 hours

WILLS AND ADMINISTRATION OF ESTATES

4 hours

COMMERCIAL TRANSACTIONS
This course consists of a study of the Uniform Commercial Code and materials formerly taught in Sales and Negotiable Instruments, and deals with the problems governing documents of title, commercial paper and sales financing arrangements. Casebook to be chosen.

8 hours

Davis, *Administrative Law Cases*.
ELECTIVE COURSES

Because of the number of courses required to be taken, the student does not have the opportunity to take all of the electives. He is given elective courses from those listed and may not have the opportunity to take a specified course.

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.

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.

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.

DOMESTIC RELATIONS 4 hours
A course dealing with the legal aspects involved in the organization and disorganization of the family with particular emphasis upon marriage, separation, divorce, annulment, and the rights and duties of spouses and infants. Compton, Cases on Domestic Relations.

FEDERAL TAXATION I 5 hours

FEDERAL TAXATION II 3 hours
This course deals with federal estate and gift taxes. Birrker, Federal Income, Estate and Gift Taxation.

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).

Jurisprudence 3 hours
An inquiry into the nature and function of law and of justice and the relation of law and justice to each other. The course will consist of a series of lectures and discussions centered on the work of legal thinkers from ancient times to the present and independent analysis of jurisprudential ideas by the students.

Labor Law 3 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, including the Taft-Hartley Law, and the Labor Management Disclosure Act of 1959. Cox, *Cases on Labor Law* (4th Edition).

Legal Problems 3 hours
Training will be had in legal research, in writing office memoranda, trial briefs and appellate court briefs, and in making oral arguments on the appellate level.

Medicine for Lawyers 3 hours
This course is designed to provide medical background useful in the practice of law and to enable students to make better use of expert medical witnesses.

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.*
REAL ESTATE TRANSACTIONS 4 hours
This course deals with the legal concepts and institutions of the marketing of land. It cuts across other fields such as equity, conveyancing, vendor and purchaser, landlord and tenant, and mortgages, in covering material revolving about a central theme—the marketing of land use. Dunham, Modern Real Estate Transactions (2nd Edition).

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.
Board of Trustees

OFFICERS OF THE BOARD

JOHN V. MELICK, Chairman

J. OTIS YOUNG, Vice Chairman

LESTER L. ROUSH, Secretary

MEMBERS OF THE BOARD

F. BRINGLE MCGINTOSH, A.B., S.T.B., D.D., LL.D.,
   President of the University
   Ex-Officio Member of the Board and all Committees

_Initus_  

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Position</th>
<th>Address</th>
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<tbody>
<tr>
<td>1949</td>
<td>CHARLES B. HOFFMAN</td>
<td>Masonic Temple, Dayton, Ohio</td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td>WILLIAM L. STEFFENS</td>
<td>AB., Th.B., D.D.</td>
<td>Canton, Ohio</td>
</tr>
<tr>
<td>1956</td>
<td>WALTER ENGLISH, B.S.</td>
<td></td>
<td>Walter English Company, Columbus, Ohio</td>
</tr>
<tr>
<td>1947</td>
<td>GEORGE W. HERD, A.B., D.D.</td>
<td></td>
<td>155 East Wheeling St., Lancaster, Ohio</td>
</tr>
<tr>
<td>1958</td>
<td>LESTER L. CECIL, LL.M., LL.D.</td>
<td></td>
<td>U. S. Federal Court, Cincinnati, Ohio</td>
</tr>
<tr>
<td>1960</td>
<td>HAROLD R. WEAVER, A.B., B.D., Ph.D.</td>
<td></td>
<td>First Methodist Church, Findlay, Ohio</td>
</tr>
<tr>
<td>1960</td>
<td>STEPHEN S. BEARD, LL.B.</td>
<td></td>
<td>201 Marsh Building, Van Wert, Ohio</td>
</tr>
<tr>
<td>1961</td>
<td>WILLIAM JUDD</td>
<td></td>
<td>7643 Forest Rd., Cincinnati, Ohio</td>
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_EXodus_
### Elected by the North East Ohio Conference

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Title</th>
<th>Institution/Location</th>
<th>Year</th>
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<tbody>
<tr>
<td>1946</td>
<td>S. Lee Whiteman, A.B., M.A., S.T.B., D.D.</td>
<td></td>
<td>Administrative Assistant to the Bishop, Columbus, Ohio</td>
<td>1964</td>
</tr>
<tr>
<td>1955</td>
<td>Stewart McHenry, B.A., LL.B.</td>
<td></td>
<td>250 Peoples Bank Bldg., Canton, Ohio</td>
<td>1965</td>
</tr>
<tr>
<td>1950</td>
<td>Arthur Hooper, LL.B., LL.D.</td>
<td></td>
<td>Court House, Steubenville, Ohio</td>
<td>1966</td>
</tr>
<tr>
<td>1960</td>
<td>Norman J. Brickner, Ph.G.</td>
<td></td>
<td>Cuyahoga Falls, Ohio</td>
<td>1963</td>
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### Elected by the Alumni

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<tr>
<td>1957</td>
<td>Harold J. Meredith, LL.B.</td>
<td></td>
<td>The City Loan and Savings Co., Lima, Ohio</td>
<td>1962</td>
</tr>
<tr>
<td>1959</td>
<td>Burke Gardner, Ph.G.</td>
<td></td>
<td>722 S. Main St., Ada, Ohio</td>
<td>1964</td>
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<tr>
<td>1961</td>
<td>Joseph E. Marmion, B.S. Pharmacy</td>
<td></td>
<td>Indianapolis, Indiana</td>
<td>1966</td>
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### Elected by Trustees at Large

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<th>Name</th>
<th>Title</th>
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<th>Year</th>
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<tr>
<td>1950</td>
<td>Mrs. Jay P. Taggart, B.Ot.</td>
<td></td>
<td>119 W. Montford St., Ada, Ohio</td>
<td>1964</td>
</tr>
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</table>
1955  William O. Elzay, A.B., M.B.A.
      339 East 58 Street, New York, New York
      1965
1949  Bishop Hazen G. Werner, A.B., B.D., D.D., LL.D.
      12 North Third St., Columbus, Ohio
      1961
1935  Benjamin F. Fairless, S.D., D.Eng., LL.D., D.C.S.
      U. S. Steel, Pittsburgh, Pa.
      1961
1954  John M. Tittle, B.S.
      Stein, Roe & Farnham, Chicago, Illinois
      1962
1943  A. A. Stambaugh, A.B., LL.B., LL.D.
      2735 Ashley Road, Shaker Heights, Ohio
      1962
1946  J. V. Melick, D.B.A.
      Toledo, Ohio
      1964

TRUSTEES EMERITI

      89 Greenacres Ave., Scarsdale, New York

1947  Warren W. Wiant, D.D.
      129 Glencoe Road, Columbus, Ohio

1947  J. Boyd Davis, B.S., M.S., D.B.A.
      700 Bryden Road, Columbus, Ohio
University Administration

UNIVERSITY ADMINISTRATIVE COMMITTEE

FRANK BRINGLE McINTOSH, A.B., S.T.B., D.D., LLD.
President of the University

EUGENE K. EAKIN, A.B., B.S.T., M.Ed., Ph.D., LLD.
Administrative Vice President of the University

KENNETH F. MARTIN, B.S., A.M., M.B.A.
Treasurer and Business Manager

ROBERT R. HUDDELESTON, A.B., B.D., Th.D.
University Chaplain and Director of Church Relations

GEORGE B. MILLER, JR., B.S.A.E., M.Ed., Ed.D.
Dean of Students

ELMA GRANT DAVIS, B.A., M.A.
Associate Dean of Students and Dean of Women

GEORGE W. SCHERTZER, A.A.
Director of Alumni and Public Relations

ADDITIONAL UNIVERSITY STAFF MEMBERS

OSCAR G. DARLINGTON, A.B., A.M., Ph.D.
Dean, College of Liberal Arts

Dean, College of Engineering

ALBERT CHARLES SMITH, B.S., M.S., Ph.D.
Dean, College of Pharmacy

EUGENE N. HANSON, A.B., A.M., LL.B., LL.M.
Dean, College of Law

JAMES ANDREW WOOFTER, A.B., A.M., Ed.D.
Registrar

FREDERICK I. KUHNS, B.A., B.D., A.M., Ph.D.
Librarian

WILLIAM D. HUMPHREY, B.S., M.A.
Director of Evening Division
HILDRED B. JONES, A.B., A.M., Ph.D.
Dean of the Summer School

RALPH L. MCFARLAND, B.S.Ed.
Director of Admissions

MARY LOU PFEIFFER
Admissions Counselor

ADMINISTRATIVE ASSISTANTS

LETA JUMP, B.S., A.B., A.M., M.S.L.S.
Assistant Librarian

Counsellor of Freshman Men

HAROLD COTSAMIRE, B.B.A.
Bursar

VELMA MAINHART
Head Resident, Lima Hall

ANNA STOTTS
Head Resident, Moorman Annex

MABEL S. WELLS
Head Resident, Clark Hall

LEORA SMITH
Head Resident, Women's Dormitory

DEANS EMERITI

RUDOLPH HENRY RAABE, B.S., Phar.D.
Dean Emeritus, College of Pharmacy

THOMAS JEFFERSON SMULL, C.E., M.E., Eng.D.
Dean Emeritus, College of Engineering

CLAUDE WESTCOAT PETTIT, A.B., LL.B., LL.M., LL.D.
Dean Emeritus, College of Law

UNIVERSITY HEALTH SERVICE

ROBERT B. ELLIOTT, M.D., Physician

FLOYD M. ELLIOTT, M.D., Physician

JANE HILTY, R.N., B.S. in Nursing, Nurse
The Faculty and Administrative Officers

(The year refers to the time of initial service to the University)

FRANK BRINGLE McINTOSH, A.B. (DePauw), S.T.B. (Boston), D.D. (DePauw), LL.D. (Rio Grande), LL.D. (Ohio Wesleyan), 1949
President of the University with rank of Professor

Administrative Vice President of the University with rank of Professor

ERNESTS ABELE, M. Math. Sc. (University of Latvia), 1952
Chairman, Department of Physics
Professor of Physics

CARROLL R. ALDEN, B.S.E.E., B.S.M.E., (Ohio Northern), M.E. (Detroit Institute of Technology), P.E. (Ohio), 1955
Lecturer, Professor of Electrical Engineering

OSCAR E. ARAUJO, B.S., M.S., Ph.D. (Purdue), R.Ph. (Indiana), 1957
Associate Professor of Pharmacy

Dean, College of Engineering
Professor of Civil Engineering

ALBERT A. BAillis, A.B. (Western Reserve), LL.B. (Western Reserve), 1957
Associate Professor of Law

JOSEPH BANKS, B.S.in Ed. (Ohio Northern), M.E. (Kent State), 1960
Assistant Professor of Physical Education

LOUIS A. BARKER, B.S., M.A. (Michigan State), 1957
Professor of Psychology

BETTY JANE BARTLETT, B.A. (Muskingum), M.A. (Michigan), 1960
Associate Professor of Speech and Drama, Director of Theatre

HERMAN D. BEHRENS, B.Sc. in Ed. (Kansas), M.A., Ph.D. (Ohio State), 1961
Professor of Education
GEORGE E. BELCH, B.A. (Austin), M.A. (Texas), 1960
Instructor in English and Journalism

A. A. BENEDICT, A.B. (Ohio Wesleyan), A.M. (Ohio State), 1952
Professor of Physics

FRANCES HARRIET BENNETT, B.S.Ed., A.M. (Ohio State), 1953
Assistant Professor of English

GORDON M. BENNETT, B.A. (New York State), M.A. (Teachers College, Columbia), 1959
Assistant Professor of Mathematics

LEWIS C. BENTON, B.S. in Pharm. (Ohio Northern), R.Ph. (Ohio), 1957
Instructor in Pharmacy Administration

PATSY S. BIANCHI, B.S., M.S. in Pharm., Ph.D. (Washington), 1961
Assistant Professor of Pharmacognosy

Head, Division of Social Sciences
Professor of History and Political Science

CHARLES L. BLUMSTEIN, M.D. (Louisiana State University School of Medicine), 1961
Lecturer in Law

ROBERT BOWDEN, A.B. (Haverford), B.S. (Ohio Northern), A.M. (Michigan), 1952
Chairman, Department of Biology
Associate Professor of Biology

DAVID E. BOWLING, JR., B.S.Ed. (Wilmington), M.Ed. (Ohio U.), 1959
Instructor in Industrial Arts

Assistant Professor of Mechanical Engineering

DANIEL R. BUTLER, JR., B.S. (Florida), Ph.D. (Ohio State), 1961
Assistant Professor of Biology

SILAS EARL CARMEAN, JR., B.S.E.E. (Ohio Northern), M.S. (Ohio State), E.I.T. (Ohio), 1960

JOHN J. CORKERY, B.S. (West Chester), M.A. (Ohio State), 1961
Assistant Registrar
Instructor in Electrical Engineering
OSCAR W. COOLEY, A.B. (Middlebury), M.S. (Butler), 1956
Associate Professor of Economics

HAROLD COTSAMIRE, B.B.A. (Ohio State), 1957
Bursar with rank of Instructor

MABEL CRAWFORD, Ph.B. (Denison), M.A. (Columbia), 1955
Assistant Professor of English

WILLIAM ROBERT CRIDER, B.S. in Soc. Adm. (Ohio State), M.Ed. (Bowling Green), 1961
Assistant Professor of Psychology

OSCAR G. DARLINGTON, A.B., A.M. (Penn State), Ph.D
(Pennsylvania), 1955
Dean, College of Liberal Arts
Professor of History

ELMA GRANT DAVIS, B.A. (Northwestern), M.A. (Arkansas), 1956
Associate Dean of Students and Dean of Women with the rank of Assistant Professor

RHEA EARL, B.S. in Ed. (Ohio Northern), M.Ed. (Pittsburgh), 1960
Assistant Professor of Education

MARVIN ENGLISH, B.S. (Ohio Northern), A.M. (Columbia), 1949
Associate Professor of Physical Education

FRANKLIN D. FARRINGTON, B.S.M.E. (Ohio Northern), 1961
Instructor in Mechanical Engineering

SAMUEL M. FETTERS, LL.B. (DePaul), LL.M. (Illinois), 1957
Assistant to the Dean
Associate Professor of Law

BERTRAM C. FINK, B.A. (Hillsdale), M.F.A. (Ohio), 1959
Instructor in Art

OTIS GAMES, A.B. (Ohio Wesleyan), A.M. (Ohio Wesleyan), D.Ped.
(Ohio Northern), 1952
Counsellor of Freshman Men with the rank of Assistant Professor

FLORENCE GERDES, B.A. (Michigan), M.A. (Columbia), 1958
Assistant Professor of English

ALBERT BORDEN GMINDER, B.A. (Catawba), M.A., Ph.D. (North Carolina), 1959
Assistant Professor of Romance Languages
VERNON ALBERT GREEN, B.S., M.S. (Oklahoma), Ph.D. (Texas), 1961
Professor of Pharmacology

BERNARD F. GRABOWSKI, B.S. in Pharm., M.S. in Pharm. (Temple),
Ph.D. (Maryland), 1961
Assistant Professor of Pharmaceutical Chemistry

MILAN GORBY, JR., B.S. in Ed. (Rio Grande), B.S. in Pharm. (Ohio Northern), R.Ph. (Ohio), 1960
Instructor in Pharmacology

JOHN GRIGSBY, B.Mus., M.A. (Ohio State), 1959
Assistant Professor of Music

DANIEL S. GUY, A.B. (Ohio Wesleyan), LL.B. (Ohio Northern), LL.M. (Michigan), 1959
Assistant Professor of Law

EUGENE N. HANSON, A.B. (Luther), A.M., LL.B. (Wisconsin), LL.M. (Michigan), 1947
Dean, College of Law
Professor of Law

KATIE LOU HANSON, A.B., A.M. (South Carolina), Ed.D. (Columbia), 1948
Professor of Education

A. LOUISE HASTINGS, A.B., M.A., Ph.D. (Indiana), 1957
Associate Professor of English

EMERSON W. HIBBARD, B.S. (Massachusetts), LL.B. (W.N.E.), M.A. (Columbia), 1958
Associate Professor of Economics and Business Administration
(Leave of Absence)

ALLEN W. HIGGINS, B.S.Ed. (Bemidji State), M.A. (Minnesota), 1955
Assistant Professor of English

CHARLES A. HILL, B.S.Ed., M.Ed. (Ohio Univ.), 1958
Assistant Professor of Music

ARCHIE V. HILLERY, B.S.C.E. (Ohio Northern), P.E. (Ohio), 1954
Associate Professor of Civil Engineering

ROBERT H. HILLIARD, A.B., B.S.Ed., A.M., Ph.D. (Ohio State), 1946
Chairman, Department of History and Political Science
Professor of History

HAROLD H. HINDERLITER, A.B. (Houghton), S.T.B. (Wesley Theological Sem.), Ph.D. (Vanderbilt), 1960
Assistant Professor of Philosophy and Religion
FLOYD W. HOCH, BS. in Ed. (Ohio Northern), 1961
*Assistant Instructor in Biology*

IVAN C. HODGES, A.B. (Taylor), S.T.B. (Boston), A.M. (Earlham), 1955
*Assistant Professor of Philosophy and Religion*

HENRY HORTDT, (Technical School, Karlsruhe, Germany), B.S.M.E. (Michigan College of Mining and Tech.), P.E. (Michigan), 1958
*Professor of Mechanical Engineering*

ROBERT R. HUDDLESTON, A.B. (Baker), B.D. (Garrett), Th.D. (Iliff), 1959
*University Chaplain and Director of Church Relations
Instructor in Philosophy and Religion*

WILLIAM D. HUMPHREY, B.S. (Lafayette), M.A. (Oberlin), 1957
*Director of Evening Division
Associate Professor of Business Administration*

NORMAN F. JENNINGS, B.S.M.E., B.S.E.E. (Ohio Northern), M.S. (Ohio State), P.E. (Ohio), 1951
*Associate Professor of Mechanical Engineering
Head of Department of Mechanical Engineering*

HILDRED B. JONES, A.B. (Blue Ridge College), A.M. (West Virginia), Ph.D. (University of Pittsburgh), 1954
*Director of Teacher Education
Dean of the Summer School
Professor of Education*

WILLIAM C. JORDAN, B.S. in Ed., M.A. (Ohio State), 1959
*Professor of Education*

BARRY W. JUDD, A.B. (Oberlin), 1961
*Instructor in Foreign Language*

LETA JUMP, B.S.Ed., A.B. (Ohio Northern), A.M. (Ohio State), M.A.L.S. (Kent State), 1953
*Assistant Librarian with rank of Assistant Professor*

RICHARD D. KAIN, B.S. (Ohio Northern), M.A. (Ohio State), 1953
*Chairman, Department of Industrial Arts
Assistant Professor of Industrial Arts*

DAN F. KELLEHER, B.F.A. (Texas), 1959
*Instructor in Theatre*

JAMES L. KLINKENBERGER, B.S.E.E. (Ohio Northern), M.S. (Ohio State), P.E. (Ohio), 1949
*Professor of Electrical Engineering
Head, Department of Electrical Engineering*

JOAN M. KLING, B.S. in Ed. (Otterbein), 1961
*Instructor in Mathematics*
JOEL R. KLINK, B.S., Ph.D. (Ohio State), 1961
Instructor in Chemistry

GERALD L. KOCK, B.A., J.D. (Chicago), 1961
Assistant Professor of Law

ANNA H. KOFFLER, (Maedchen Realgymnasium, Vienna), Diploma (State Teachers College, Vienna), Ph.D. (University of Vienna), Graduate Studies (Rutgers), 1953
Professor of Pharmacognosy

FREDERICK I. KUHNS, B.A. (Ohio State), B.D. (Union), A.M. (Chicago), Ph.D. (Chicago), 1960
Librarian with the rank of Associate Professor

KATHRYN Z. KUHNS, B.A. (State Teachers College, N.D.), M.Ed. (Montana), 1960
Assistant Professor of Mathematics

CLYDE A. LAMB, B.S. (Coe), A.M. (Columbia), 1929
Chairman, Department of Physical Education
Professor of Physical Education

CHARLES OREN LEE, B.Sc. in Pharm. (Kansas, Baker), M.S. (Chicago), Ph.D. (Wisconsin), R.Ph. (Indiana), 1954
Professor of Pharmacy

SHIU LEE, B.S., M.S. (U. of California, Berkeley), 1959
Instructor in Chemistry (Leave of Absence)

BARNEY C. LEPOVETSKY, B.S., M.Sc., Ph.D. (Ohio State), 1955
Associate Professor of Bacteriology

EARL E. LHAMON, B.A. (Ohio Northern), B.S.E.E. (Ohio Northern), 1959
Instructor in Mathematics

ROGER PAUL LOVELL, B.A. (Kent), M.A. (Texas), 1961
Instructor in Foreign Languages
Assistant Professor in Education

MARGARET E. MACNAUGHTON, B.A. (Mary Washington), M.A. (Indiana), 1960
Assistant Librarian with the rank of Instructor

Assistant Professor of Education

RALPH L. MCFARLAND, B.S. in Ed. (Wilmington), 1957
Director of Admissions with the rank of Instructor

DAVID H. MARKLE, A.B. (Ohio Wesleyan), B.D., A.M., Ph.D. (Yale), 1949
Chairman, Department of Sociology and Psychology
Professor of Sociology
Treasurer and Business Manager with the rank of Associate Professor

J. Thomas Matthews, Jr., B.M. (Hendrix), M.A. (Columbia), 1958
Associate Professor of Music

Gerald R. Messick, B.S.E.E. (Ohio Northern), 1958
Instructor in Physics

Larry Lee Michael, B.S. in Ed. (Ohio Northern), 1960
Instructor in Physical Education

George B. Miller, Jr., B.S.A.E. (Georgia Tech.), M.Ed. (Emory), Ed.D. (Georgia), 1960
Dean of Students with the rank of Associate Professor

Anthony L. Milnar, A.B. (Upsala), M.S. (Indiana), Ph.D. (Georgetown), 1955
Professor of History and Political Science

James Munro, A.B. (Yale), J.D. (Northwestern), 1958
Associate Professor of Law

James C. Newcomb, B.S., M.S., Ph.D. (Pittsburgh), 1961
Assistant Professor of Pharmacy

Izaak Opatowski, (U. of Bologna, Italy), D.Eng. (Engr. Institute, Turin, Italy), D.Math. (U. of Turin, Italy), 1959
Associate Professor of Mathematics

Mozele Pickering, B.S.Ed. (Ohio Northern), P.T. (Penn State), 1957
Assistant Professor of Physical Education

Robert P. Price, A.B. (Southwestern), A.M. (Columbia), 1951
Assistant to the Dean
Associate Professor of English

David L. Randall, B.A., M.A., Ph.D. (Yale), 1957
Professor of Chemistry

Harriette Smith Ritz, B.S., M.S. (Indiana), 1947
Associate Professor of Business Education

Arden Roberson, B.S. in Ed. (Ohio Northern), M.E. (Kent), 1960
Assistant Professor of Physical Education

C. C. Roberson, B.S. (Oakland City, Ind.), M.A. (Ohio State), 1961
Professor of Education
GEORGE A. ROBINSON, A.B., M.A. (Suffolk), 1961
Instructor in Chemistry

WILLIAM L. ROBINSON, B.S. in Ed. (Ohio Northern), 1961
Assistant Instructor in Physical Education

CATHERINE L. ROIDER, B.A. (Rochester), 1959
Instructor in Mathematics

KARL ANDREW ROIDER, B.Mus. (Eastman School of Music), M.Mus. (Rochester), Ed.D. (Columbia), 1945
Chairman, Department of Music
Professor of Music

JOHN SABOL, B.A., M.A. (Michigan State), 1957
Assistant Professor in History

GEORGE W. SCHERTZER, A.A. (Ohio Northern), 1956
Director of Alumni and Public Relations

MATTHIAS SCHMITZ, A.B. (Cologne), A.M., Ph.D. (Harvard), 1952
Head, Division of Humanities
Chairman, Department of Foreign Languages
Professor of Foreign Languages

ALBERT CHARLES SMITH, B.S. in Pharm. (Ohio State), M.S., Ph. D. (Purdue), R.Ph. (Ohio, Indiana), 1944
Dean, College of Pharmacy
Professor of Pharmaceutical Chemistry

CECIL L. SMITH, A.B. (Ohio Wesleyan), S.T.B., M.R.E. (Boston), 1959
Assistant Professor of Bible and Religion

E. VERGON SMITH, A.B. LL.B. (Ohio Northern), 1922
Professor of Law and Law Librarian

ROY E. SNYDER, B.S., M.S. (West Virginia), 1956
Assistant Professor of Biology

BOYD M. SOBERS, B.A. (Ohio Northern), M.A. (Western Reserve), 1956
Assistant Professor of History

GEORGIA P. SPELMAN, A.B. (Eureka), M.A. (Bradley), 1959
Assistant Professor of Speech

CARLE B. SPOFFITT, A.B. (Dickinson), M.A., Ph.D. (Penn. State), 1960
Chairman, Department of English, Speech and Theatre
Professor of English

ANDREW STAUFFER, B.S. (Ohio Northern), B.S.A., M.S. (Ohio State), 1953
Head, Division of Natural Sciences
Professor of Biology
ROGER J. STAUFFER, B.S. (Ball State), M.A. (Columbia), 1959
   Instructor in Business Education

CLAYTON H. STIMMEL, B.S.C.E. (Ohio Northern), E.I.T. (Ohio), 1960
   Instructor in Civil Engineering

RALPH L. THOMAS, B.S. (Lafayette), M.Lit., Ph.D. (Pittsburgh), 1961
   Chairman, Department of Economics and Business Administration
   Associate Professor of Economics and Business Administration

MARION ELMER TINSLER, A.B. (Bluffton), B.D. (Garrett), Th.D. (Illiff), 1943
   Chairman, Department of Philosophy and Religion
   Professor of Philosophy and Religion

ERNEST A. VAN ATTA, B.S. in Ed. (Ohio Northern), M.A. (Ohio State), 1960
   Assistant Professor of Education

GEORGE D. VAUBEL, LL.B. (Ohio Northern), 1958
   Assistant Professor of Law

LOWELL E. WEITZ, B.S.Mus.Ed. (Ohio Northern), M.F.A. (Ohio), 1960
   Instructor in Music

   Assistant Professor of Art
   Chairman, Department of Art

GENEVIEVE WHEELock, A.B. (Ohio Wesleyan), B.S.L.S. (Western Reserve), 1949
   Library Assistant
   Assistant Professor of Education

GILBERT WILLIAMSON, B.S.C.E. (Ohio Northern), M.S. (New Mexico), P.E. (Ohio, West Virginia), 1961
   Assistant Professor of Civil Engineering

JAMES A. WIRE, B.A. (Oakland City), B.D. (Southern Baptist Seminary), M.S. (Purdue), 1959
   Instructor in Psychology
   Director of Testing

JAMES ANDREW WOOTER, A.B. (Salem), A.M. (Virginia), Ed.D. (Cincinnati), 1947
   Registrar with the rank of Professor

DAVID F. WRIGHT, B.S. in Chem. (Tufts), Ph.D. (Ohio State), 1957
   Associate Professor of Chemistry
   Chairman, Department of Chemistry
MARITA D. WRIGHT, B.S. in Chem. (Tufts), M.S. (Ohio State), 1960
Instructor in Chemistry

METE YALCIN, B.S.C.E. (Robert), M.S.C.E. (Kansas State), 1960
Assistant Professor of Civil Engineering

WALTER A. ZAUGG, A.B. (Valparaiso) (Indiana), A.M. (Columbia),
Ph.D. (New York), 1954
Professor of Education

PART-TIME FACULTY

WILLIAM C. BYRD, B. Mus., M. Mus. (Cincinnati), 1960
Assistant Professor of Music

OLIVER SCHUMACHER, 1961
Instructor in Stringed Instruments

ESTHER SPOTTS, A.B. (Dickinson), 1960
Instructor in Piano
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