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. (DAVID H. MARKLE, Division Head)
1) Economics and Business Administration
2) History and Political Science
3) Psychology and Sociology

DIVISION IV: TEACHER EDUCATION. (HILDERB 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. 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 to take two units of Latin and/or a modern foreign language while in high school. High school students on the Advanced Placement Program are accepted at Ohio Northern University.

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. A change of major from one program or from one department to another is effected by means of a Change of Major card which requires the signatures of the chairman of the department he is leaving and the chairman of the department in which he wishes to enter and the approval of the dean. These cards are lodged in the Registrar’s office and are the Registrar’s official authorization concerning his major filed.

THE DEGREE OF BACHELOR OF ARTS

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

Prescribed: Certain courses are prescribed in the program of general education. These include one year of English Composition, a quarter of Speech, two one-year courses in two of the social sciences, Historical Study of Philosophy and Religion (or a one-year course in philosophy or religion upon approval), six quarters in two of the natural sciences, including Math. 111, 112, and 113, but excluding Chemistry 105 and Physics 210, one full year of advanced work in English or American Literature, two quarters in art, music, or theatre, 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 69 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
Mathematics
Music
Philosophy and Religion
Physics
Political Science
Psychology
Sociology

**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 the student must 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.) An 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 include 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 are established by the Liberal Arts faculty upon recommendation of the Department of Education. These curricula 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, and to meet requirements for admission to most graduate schools, candidates for the B.S. in Education are advised to take at least one year and preferably two years in this field.

All students preparing to teach at either the elementary or secondary level have their programs approved by the Chairman of the Department of Education. Those students majoring in secondary education meet the requirements for a major in a teaching field under the direction of its department chairman.

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 is discontinued beginning with the academic year 1963-1964.

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, including a regular major in one academic department)
i. Social Science (Comprehensive major, including a regular major in one academic department)
j. Speech (including Theatre)

6. BUSINESS EDUCATION
   a. Comprehensive in Business Education
   b. Bookkeeping—Basic Business
   c. Stenography—Typing
   d. Salesmanship—Merchandising

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-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, ARTS-NURSING

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 of Arts degree on presentation of evidence of registration as a Medical Technologist by the National Registry or by the presentation of evidence of the R.N. degree. 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.

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.

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 adviser 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 requirement is permitted by the Dean in an individual case upon the recommendation of the adviser.

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 2.0 is expected throughout the freshman year, with 1.8 required 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 or strict 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 an accumulative 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 mys-
teries of life. A one-year unit of study designed and recommended for meet-
ing the Philosophy-Religion requirements for graduation.

THE DEPARTMENTAL COURSES

ART

Assistant Professor West (Chairman)
Mr. Fink, Mr. Longshore

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 essen-
tial ingredient of an educated person, and provides opportunities for develop-
ing 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. Art for Elementary Teachers 6 hours
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.

**9 hours**

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.*

**3 hours**

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.*

**9 hours**

**ART 210. DESIGN APPLIED TO MATERIALS**
The application of design to a variety of material with emphasis on decorative quality. Variety of materials and techniques. Permission and Art 123. May repeat to 9 hours.

**3 hours**

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

*Prerequisite:* 123 Design. Laboratory.

**3 hours**

**ART 230. PAINTING**
Methods, techniques, and personal expression are stressed. Maximum credit in course 9 hours. Permission and Art 113, Art 123.

**3 hours**

**ART 251-252-253. SCULPTURE**
Modeling from life in clay; casting in plaster and metal; modeling in wood and stone.

*Prerequisite:* Drawing 213; permission.

**9 hours**

**ART 261-262. LETTERING AND COMMERCIAL DESIGN**
The elements, principles, and techniques of lettering and design applied to commercial packaging, advertising, etc. Emphasis on student practice.

*Prerequisite:* Permission; Art 123 and 113.

**6 hours**

**ART 300. JEWELRY**
The design and construction of jewelry in a variety of materials. Emphasis on originality and student proficiency.

*Prerequisite:* Art 123, permission and 10 hours in departmental courses. Demonstrations and laboratory experience.

**3 hours**

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

*Prerequisite:* Permission of Instructor.

**9 hours**

**ART 311-312-313. FIGURE DRAWING**
Emphasis on anatomical construction the first quarter. Second and third quarter on composition and expression.

*Prerequisite:* Art 113, with a "B" minimum. Permission.

**9 hours**
ART 321-322-323. CONTEMPORARY TRENDS  
6 hours  
A seminar treating in depth some of the specific and major art movements from 1850 to the present. Individual research problems coupled with reports and discussions based on the findings of individual research. Permission and Art 203.

ART 390. TEACHING OF ART  
5 hours  
The methods, techniques, media, administration, financing and planning of an art program. For art majors only. 25 hours of art; junior rank; permission.

ART 399. ART EDUCATION WORKSHOP  
3 hours  
Open to those who have completed Art 103. A seminar type course with an emphasis on children, their concepts, goals, and art production—especially for the gifted and the slow learning child. Lecture, research, and studio assignments. Permission of instructor and Art 101-103. May be repeated to 9 hours.

401. ADVANCED PAINTING  
3 hours  
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 SCULPTURE  
3 hours  
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  
Advanced independent study of any approved problem within the realm of the department. May be repeated to maximum of 9 hours in any area of specialization within the department. Advanced standing, 25 hours of Art, and approval of department chairman. At least 1 hour must be scheduled by seniors to cover public exhibit of his work.

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

FRESHMAN YEAR

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<tr>
<th>Liberal Arts Orientation</th>
<th>(1) QTR. HOURS</th>
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<tr>
<td>History</td>
<td>9</td>
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<tr>
<td>English</td>
<td>9</td>
</tr>
<tr>
<td>Biology, Botany, Math., or Chem.</td>
<td>12-13</td>
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<tr>
<td>Physical Education</td>
<td>(3)</td>
</tr>
<tr>
<td>Drawing 111, 112, 113</td>
<td>9</td>
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<tr>
<td>Design 121, 122, 123</td>
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52-53
## Sophomore Year

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<th>Course</th>
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<tr>
<td>Philosophy</td>
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<tr>
<td>Art History 201, 202, 203 (required)</td>
<td>9</td>
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<tr>
<td>Art Courses as required</td>
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<tr>
<td>Free Elective</td>
<td>9</td>
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<tr>
<td>Physical Education</td>
<td>(3)</td>
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**Total Credits:** 48

## Junior Year

<table>
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<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English or American Literature</td>
<td>9</td>
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<tr>
<td>Art Courses as required</td>
<td>15-18</td>
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<tr>
<td>Speech</td>
<td>3</td>
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<tr>
<td>Foreign Language or Certification</td>
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<td>Requirements for teachers</td>
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<td>Psychology 201</td>
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<td>Elective</td>
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**Total Credits:** 47-50

## Senior Year

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<th>Course</th>
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<tbody>
<tr>
<td>Foreign Language or Certification</td>
<td>12</td>
</tr>
<tr>
<td>Requirements for teachers</td>
<td>18</td>
</tr>
<tr>
<td>Art Electives</td>
<td>18</td>
</tr>
<tr>
<td>Electives in Other Fields</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits:** 48

## Biology

**Assoc. Prof. Bowden (Chairman), Prof. Stauffer, Asst. Prof. Snyder, Asst. Prof. Butler, Mr. Hoch Dr. Tipple**

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, 440 and 423 or 430 or 433. 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** 12 hours

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 experiments 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 discussion and laboratory dissection of the different systems in representative forms. In embryology general principles of vertebrate development are discussed; laboratory study of certain vertebrate embryos illustrates the changes in form in the development of the adult organism.

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

**Prerequisite:** General Biology 111-113, or permission of the instructor.
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 understanding of the structure and function of the human body.
   The lectures include a few by guests who lecture in fields of their specialization.
   The laboratory includes dissection of a representative mammal and experiments illustrating physiological principles. Lecture, discussion, laboratory, 6 hours.
   Prerequisite: General Biology 111-113, or permission of the instructor.

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 1—3 hours
   Minor investigations for qualified juniors and seniors who are concentrating in Biology. By arrangement any quarter.

CHEMISTRY

Associate Professor Wright (Chairman), Professor Randall, Mr. Klink, Mrs. Wright, Mr. Byrnes, 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. It is designed to furnish adequate preparation for those wishing to continue with graduate studies in chemistry. This program is outlined in detail below; (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 121-122-123, 221-222-223, 311-312-313, and 331-332-333.

### BASIC CURRICULUM FOR MAJORS IN CHEMISTRY

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Chemistry 121, 122, 123, General Chemistry and Qualitative Analysis</td>
<td>15</td>
</tr>
<tr>
<td>Mathematics 131, 132, 133, College Algebra and Trigonometry, Analytical Geometry, Calculus I</td>
<td>15</td>
</tr>
<tr>
<td>English C-1, C-2, C-3</td>
<td>9</td>
</tr>
<tr>
<td>Social Science Course</td>
<td>9</td>
</tr>
<tr>
<td>Physical Education</td>
<td>(3)</td>
</tr>
<tr>
<td>Liberal Arts Orientation</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**TOTAL**

52 qtr. hours

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 221, 222, 223, Quantitative Analysis and Physical Chemistry I</td>
<td>11</td>
</tr>
<tr>
<td>Mathematics 221, 222, Calculus II and III</td>
<td>10</td>
</tr>
<tr>
<td>Physics 241, 242, 243, General Physics</td>
<td>15</td>
</tr>
<tr>
<td>English or American Literature</td>
<td>9</td>
</tr>
<tr>
<td>Physical Education</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective (Math 223 recommended)</td>
<td>3 to 5</td>
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</table>

**TOTAL**

51 to 53 qtr. hours

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 311, 312, 313, Organic Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>Chemistry 331, 332, 333, Physical Chemistry II, III, and IV</td>
<td>12</td>
</tr>
<tr>
<td>German 101, 102, 103, Elementary German</td>
<td>12</td>
</tr>
<tr>
<td>Philosophy C-31, C-32, C-33</td>
<td>9</td>
</tr>
</tbody>
</table>

**TOTAL**

48 qtr. hours
SENIOR YEAR
Chemistry 401, Chemical Literature 1
Chemistry 421, Organic Qualitative Analysis 3
Advanced Organic or Physical Chemistry 6
Chemistry 422, 423, Instrumental Analysis I and II 6
Chemistry 440, Chemistry Problems 3
German 221, 222, 223, Scientific German 9
Art, Music, Speech 9
Elective in Social Science 9
Other Electives 3 to 5

TOTAL 49 to 51

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.

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. Three hours lecture per week.

121-122. GENERAL CHEMISTRY 10 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 sciences, pre-pharmacy, pre-engineering, and pre-medical students. This course 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 121, 122, and 123 as a one-year sequence. Three hours lecture, one recitation, and one three-hour laboratory period per week.

123. ELEMENTARY QUALITATIVE ANALYSIS 5 hours
A laboratory course in semi-micro qualitative analysis of salts, with emphasis on the salts of the common metallic elements. To be taken by chemistry majors, pre-pharmacy students, and others who desire a thorough course in qualitative analysis. Two hours lecture, one recitation, and two three-hour laboratory periods per week. 
Prerequisite: Chemistry 122.

221-222. QUANTITATIVE ANALYSIS 8 hours
The study of standard methods of chemical analysis, both volumetric and gravimetric, and of the chemical principles on which these methods are based. Stress is placed upon laboratory techniques and the interpretation of
analytical data. *Two hours lecture and two three-hour laboratory periods per week.*

**Prerequisite:** Chemistry 123.

**223. PHYSICAL CHEMISTRY I**

A beginning course in physical chemistry, which, together with Chemistry 331-332-333, forms an integrated four-quarter sequence covering such topics as: properties and structure of matter, thermodynamics and chemical equilibrium, solutions, chemical kinetics, electrochemistry, and colloid chemistry. *Three hours lecture per week.*

**Prerequisites:** Chemistry 222, Mathematics 222, Physics 242.

**311-312-313. ORGANIC CHEMISTRY**

A beginning course in organic chemistry dealing with the systematic study of the chemistry of the aliphatic, aromatic, and heterocyclic compounds of carbon. Attention will be given to natural products and to some industrial and biological applications of organic chemistry. Chemistry majors are required to take two laboratory periods per week for 15 hours credit. All others take one laboratory for 12 hours credit. *Three hours lecture and one or two three-hour laboratory periods per week.*

**Prerequisite:** Chemistry 122.

**331-332-333. PHYSICAL CHEMISTRY II, III, AND IV**

A continuation of the sequence begun with Chemistry 223. The laboratory is designed to illustrate the major concepts stressed. *Three hours lecture and one three-hour laboratory period per week.*

**Prerequisites:** Chemistry 223, Physics 243.

**401. CHEMICAL LITERATURE**

A library problem course designed to provide the student with experience in the use of a scientific library. *One hour recitation per week.*

**Prerequisites:** Chemistry 313, 333.

**402. ADVANCED INORGANIC CHEMISTRY**

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. *Three hours lecture per week.*

**Prerequisites:** Chemistry 313, 333.

**411-412-413. ADVANCED ORGANIC CHEMISTRY**

An advanced course involving the study of steric, inductive, and resonance effects in organic chemistry. There will be frequent discussions of the experimental methods used for the elucidation of reaction mechanisms. *Two hours lecture per week.*

**Prerequisites:** Chemistry 313, 333.

**421. ORGANIC QUALITATIVE ANALYSIS**

An introductory course in qualitative analysis of organic compounds, based primarily on solubility, class reactions, and the preparation of derivatives.
One hour recitation and two three-hour laboratory periods per week.

Prerequisite: Chemistry 313.

422. INSTRUMENTAL ANALYSIS I

3 hours

Emphasis is placed upon electrometric techniques, including pH determinations, potentiometric and conductometric titrations, electrolytic and coulometric analyses, and polarography. Two hours lecture and one four-hour laboratory period per week.

Prerequisites: Chemistry 313, 333.

423. INSTRUMENTAL ANALYSIS II

3 hours

A continuation of Chemistry 422, with emphasis on visible spectrophotometry and its applications. Also selected experiments in calorimetry and nuclear chemistry. Two hours lecture and one four-hour laboratory period per week.

Prerequisite: Chemistry 422.

431-432-433. ADVANCED PHYSICAL CHEMISTRY

6 hours

An advanced course dealing with an introduction to statistical thermodynamics and quantum theory. Other special topics may be discussed. Two hours lecture 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. May be repeated up to 6 hours total credit.

ECONOMICS AND BUSINESS ADMINISTRATION

ASSOCIATE PROFESSOR THOMAS (Chairman)

ASSOCIATE PROFESSOR HUMPHREY,

ASSOCIATE PROFESSOR COOLEY, ASSOCIATE PROFESSOR RITZ,

ASSISTANT PROFESSOR STAUFFER, ASSISTANT PROFESSOR CARLSON

and SPECIAL LECTURERS.

Men's qualifications to reach high positions are based not so much on their technical competence or job know-how as on what kind of people they are. Contrary to accepted thought, the good manager manages quite as much with his heart as with his head; quite as much with instinct and intuition as with precise formulae.

—Crawford H. Greenewalt

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. Seniors should take Economics 440 in preparation for the Comprehensive Examination.

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
Contemporary Economic Problems 433
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
Time and Motion Study 332
Quality Control 333
Business Law 323
Budgeting 413

Labor Economics 341
Marketing 351
Corporation Finance 362
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

Business Organization 213
Cost Accounting 312
Shorthand & Transcription 211, 212  
Office Machines 222  
Secretarial Practice 223  
Business Communications 391  

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>
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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 or other Social Science subject</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>
</tr>
<tr>
<td>Typing</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>3</td>
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</table>

**Total** 45

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<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>
</tr>
<tr>
<td>Math. of Finance 181, 182, Statistics 283</td>
<td>11</td>
</tr>
<tr>
<td>Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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</table>

**Total** 47

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</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>
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</tbody>
</table>
Psychology 201-2, 323 | 9
Foreign Language* | 12
Elective | 3

**Total** | 48

**SENIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Language*</td>
<td>12</td>
</tr>
<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

*Students who plan 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 of representative business concerns are used to unify the principles and theories studied. *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 business machines 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.
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
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
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. SALESMANSHIP
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 plan 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 3 hours
Advanced theory considering special problems of pricing, production, and distribution under perfect competition, oligopoly, duopoly and monopoly. An attempt is made to relate theory to practices in the American economy.

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

400. ECONOMIC WORKSHOP 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.
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.

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 eco-
nomic 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.

433. CONTEMPORARY ECONOMIC PROBLEMS 3 hours
An advanced course in the analysis of current economic problems, domestic and international. These include problems in agriculture, population, old age, chronic unemployment, labor-management relations, underdeveloped countries, and the role of the United States in the world economy.

440. SENIOR COMPREHENSIVE 3 hours
This course is designed to prepare the student for the Senior Comprehensive examination, which is the final examination of the course. The plan of the course is to assist the economics major to integrate his ideas and to formulate a philosophy.

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 9 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 6 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
Listed previously.

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.
*Prerequisite:* 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 JORDAN
PROFESSOR BEHRENS
ASSISTANT PROFESSOR EARL
ASSISTANT PROFESSOR VAN ATTA
ASSISTANT PROFESSOR MACNAUGHTON
ASSISTANT PROFESSOR RUBECK

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 excessive 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.

REQUIREMENT FOR ADMISSION AS A CANDIDATE IN B. S. IN EDUCATION DEGREE

A student may enroll in the teacher education program during his freshman or sophomore years. At the end of the sophomore year formal application to be admitted as a candidate for the B. S. in Education Degree must be made. Acceptance of candidacy will be determined by the Director of Teacher Education, provided the student has a 2.25 accumulative average. The regulation also applies to students working toward the A. B. Degree and teacher certification.

GENERAL COURSES

121. INTRODUCTION TO EDUCATION 3 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. (Required of all
students in the Division of Teacher Education except those who decide to prepare for secondary teaching after they become juniors. These students may take an additional elective in Education as a substitute for this course.)

313. **EDUCATIONAL PSYCHOLOGY**

A study of the learning process and conditions that promote learning.
*Prerequisite:* Psychology 201 or permission of the instructor.
(Formerly 213)

3 hours

401. **HISTORY AND PHILOSOPHY OF EDUCATION**

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 purpose of Education in American Democracy.

3 hours

402. **SCHOOL ADMINISTRATION AND ORGANIZATION**

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.

3 hours

420. **CURRICULUM IMPROVEMENT**

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

3 hours

430. **AUDIO-VISUAL AIDS IN EDUCATION**

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

3 hours

440. **PROBLEMS IN TEACHER EDUCATION**

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.

1-3 hours

460. **EVALUATION AND MEASUREMENT OF PUPIL PROGRESS**

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. (Formerly 360)

3 hours

**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.

(See also page 40 of this catalog)
### FOUR YEAR ELEMENTARY PROGRAM

#### FIRST YEAR

<table>
<thead>
<tr>
<th>FALL</th>
<th>HOURS</th>
<th>SPRING</th>
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<tbody>
<tr>
<td>Physical Education 101</td>
<td>1</td>
<td>Physical Education 103</td>
<td>1</td>
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<tr>
<td>English Composition C-1</td>
<td>3</td>
<td>English Composition C-3</td>
<td>3</td>
</tr>
<tr>
<td>Western Civilization 111</td>
<td>3</td>
<td>Eastern Civilization 113</td>
<td>3</td>
</tr>
<tr>
<td>Biology 111 or Chemistry 105</td>
<td>4-3</td>
<td>Plays &amp; Games 133</td>
<td>3</td>
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<tr>
<td>Introduction to Education 121</td>
<td>3</td>
<td>Art 102</td>
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<tr>
<td>Music 111</td>
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<td>3</td>
</tr>
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<td>Math 111</td>
<td>3</td>
<td>Math 112</td>
<td>3</td>
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<tr>
<td>Liberal Arts Orientation (1)*</td>
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<td>Descriptive Astronomy 250</td>
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### WINTER

| Physical Education 102          | (1)   |
| English Composition C-2         | 3     |
| Western Civilization 112        | 3     |

#### SECOND YEAR

<table>
<thead>
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<th>FALL</th>
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<tr>
<td>Physical Education 201</td>
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<tr>
<td>U. S. History 211</td>
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<tr>
<td>American Literature 211 or English Literature 201</td>
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<tr>
<td>Health Education 122</td>
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<tr>
<td>Teaching Arithmetic 252</td>
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<td>Psychology 201</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Physical Education 203</td>
<td>(1)</td>
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<tr>
<td>American Government 201</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</td>
<td>3</td>
</tr>
<tr>
<td>210 or Arts &amp; Crafts 320</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
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<tr>
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</tbody>
</table>

### WINTER

| Physical Education 202                  | (1)   |
| U. S. History 212                       | 3     |
| American Literature 212 or English Literature 202 | 3     |
| Children’s Literature 233               | 3     |

#### THIRD YEAR

<table>
<thead>
<tr>
<th>FALL</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Teaching of Reading 241</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy and/or Religion C-31</td>
<td>3</td>
</tr>
<tr>
<td>Psychology of the Exceptional Child 423</td>
<td>3</td>
</tr>
<tr>
<td>Elementary School Curriculum 301</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
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</tbody>
</table>
WINTER
Philosophy and/or Religion C-32 3
Teaching Language Arts 312 3
Culture of Early Man 331 5
Physics 210 4
   — 15

SPRING
Philosophy and/or Religion C-33 3
Teaching Social Studies 311 3
Educational Psychology 313
   (formerly 213) 3
Ohio History 303 3
Elective 3
   — 15

FOURTH YEAR

FALL
Evaluation & Measurement
   460 (formerly 360) 3
Global Geography 431 5
Electives 7
   — 15

WINTER
Audio-Visual Aids 430 3
History & Philosophy of Education 401 3
Electives 9
   — 15

SPRING
Student Teaching 380 15

A student must have a 2.25 accumulative average before taking student teaching.
*(1) Does not apply towards 186 required hours 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.

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 and 112.

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.

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 School 3 hours
Objectives, methods, modern tendencies and evaluation in history, geography, civics, and related fields, planning of experience units and materials of instruction.

312. Teaching of Language Arts in Elementary School 3 hours
Problems and methods of teaching oral and written expression, handwriting and spelling and their relation to other subjects in the curriculum.

Attention is given to the organization and administration of a functional language arts program.

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 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 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) senior rank; (2) have a scholarship average of 2.25 or higher in education courses with no grade in any course lower than "C". In case of students preparing for the Dual Certificate, a scholarship average of 2.25
or higher in required courses in the subject sequence with no grade lower than "C"; (3) must possess a desirable teaching personality including such traits as interest in teaching, social adaptability, the ability to get along with people, responsibility and high moral standards; (4) must demonstrate effective communicative skills in speaking and writing; (5) 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* 3 hours
333. ADOLESCENT GROWTH & DEVELOPMENT 3 hours
   (Formerly 433, Human Growth & Dev.)
   Prerequisite: Gen. Psychology 201 3 hours
370. SCHOOL AND SOCIETY 3 hours
390. HIGH SCHOOL CURRICULUM 3 hours
450. METHODS OF TEACHING IN HIGH SCHOOL OR 3 hours
451. SPECIAL METHODS OF TEACHING 3 hours
480. STUDENT TEACHING 9 hours

24 hours

2. Two electives from the following courses:

312. EDUCATIONAL PSYCHOLOGY 3 hours
401. HISTORY & PHILOSOPHY OF EDUCATION 3 hours
402. SCHOOL ORGANIZATION & ADMINISTRATION 3 hours
430. AUDIO-VISUAL AIDS 3 hours
440. SPECIAL PROBLEMS IN TEACHER EDUCATION 1-3 hours

TOTAL 30 hours

* See exception in parenthesis under course description.
SECONDARY EDUCATION COURSE DESCRIPTION

333. ADOLESCENT GROWTH & DEVELOPMENT  3 hours
A study of the adolescent, his physical, social, emotional, and intellectual development. Special emphasis is placed on deriving an accurate picture of the adolescent growth and development in accordance with his genetic constitution and the various environmental forces that have affected him from birth. Required of secondary education majors. (Formerly 433 Human Growth & Development)
Prerequisite: Psychology 201.

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. 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. (Formerly 450)

450. 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. (Formerly 350)

451. TEACHING METHODS IN SPECIAL HIGH SCHOOL TEACHING AREAS  3 hours
Similar to Education 450 except emphasis is concentrated upon the student's major teaching area. As in Education 450, observation and evaluation of actual classroom situations are required.

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 cumulative scholarship average of 2.25
3. have a scholarship average of 2.25 or higher in education courses with
no grade in any course lower than "C". In case of students preparing to teach at the secondary level, a scholarship average of 2.25 or higher in required courses in the subject matter sequence with no grade lower than "C".

4. have completed or be in the process of completing the following courses, preferably in order of this listing:
   a. Introduction to Education
   b. Adolescent Growth & Development (prerequisite: General Psychology 201)
   c. School and Society
   d. High School Curriculum
   e. Special Methods or High School Methods

5. teach either in his major or minor field

6. must possess a desirable teaching personality including such traits as interest in teaching, social adaptability, the ability to get along with people, responsibility and high moral standards

7. must demonstrate effective communicative skills in speaking and writing

8. be approved by the Director of Teacher Education and by the chairman of his department.

The work consists of planning and teaching under supervision in the junior or senior high school one-half day, five days per week for one quarter and an average of one hour per week with supervision on the campus.

ENGLISH, SPEECH, AND THEATRE

PROFESSOR SPOCKS (Chairman)
ASSOCIATE PROFESSOR PRICE
ASSOCIATE PROFESSOR BARTLETT
ASSOCIATE PROFESSOR HASTINGS
ASSOCIATE PROFESSOR DORNBUSCH
ASSISTANT PROFESSOR BENNETT, ASSISTANT PROFESSOR HIGGINS
ASSISTANT PROFESSOR GERDES, ASSISTANT PROFESSOR SPELLMAN
ASSISTANT PROFESSOR KELLEHER, MR. BELCH
MR. MYERS

OBJECTIVES

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

CLASSIFICATION OF COURSES

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

FIELDS OF CONCENTRATION

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

General Requirements: Of the required number of hours for the concentration at least eighteen must be from the Language and Literature classification and at least twenty-seven must be on the 300-400 level. All three concentrations require two years of a modern foreign language (two years in high school being considered the equivalent of one year in college). The English Composition sequence (C-1, 2, 3), 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 375 (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  
9 hours

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), or Advanced Composition (English 350) for English C-2.

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 a 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.

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

440. SEMINAR: LANGUAGE AND LITERATURE
   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 of the depart-
   ment chairman upon special recommendation by the member of the depart-
   ment who will supervise the project.

SPEECH COURSES

160. SPEECH IMPROVEMENT
   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
   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 DICATION

262. ORAL INTERPRETATION
   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
   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
   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

372. ADVANCED PUBLIC SPEAKING
373. DISCUSSION
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
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
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
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.

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

290. RADIO WORKSHOP
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
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 concentration in Theatre. (This course counts toward the liberal arts requirement of two quarters in art, music, and theatre).

292, 293. THEATRE HISTORY
A history of the Theatre from its beginning 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 of 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.

*Prerequisites:* 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-faceted 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.
Theatre Projects

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; \textit{prerequisite}: Theatre 381-2-3 or the equivalent.
2. Directing; \textit{prerequisite}: Theatre 381-2-3 or the equivalent.
3. Acting; \textit{prerequisite}: Speech 261-2 and Theatre 283 or the equivalent.
4. History and/or Criticism; \textit{prerequisite}: Theatre 291-2-3 or English 331-2-3 or the equivalent.
5. Playwriting; \textit{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. Judd, Mr. Lovell

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 \textit{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 12 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 12 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 pictures 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 CONVERSATION AND COMPOSITION 12 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 9 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. CIVILISATION FRANCAISE 9 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 12 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** 12 hours

A systematic review of the fundamentals of grammar, pronunciation, vocabulary and idioms. Abundant conversational practice and composition based on short stories, plays, and poetry. 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** 9 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 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 CONVERSATION AND COMPOSITION** 12 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** 9 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** 9 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 KULTURGESCHICHTE** 9 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

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

SPANISH

101-102-103. ELEMENTARY SPANISH 12 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 12 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 CONVERSATION AND COMPOSITION 12 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 9 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 9 hours

Main currents of Spanish-American literature with relation to their European background.

Prerequisite: Spanish 201-203.
401, 402, 403. CIVILIZACION HISPANICA 9 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: Spanish 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 12 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 12 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 and slides. Three class periods and two hours of scheduled laboratory practice a week.
Prerequisite: Russian 101-103.

221-222-223. SCIENTIFIC RUSSIAN 9 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 9 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 9 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  
9 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  
9 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

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

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

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

The conditions in Spain and Portugal leading to Latin American colonization, and the growth of the cultural and political institutions of Latin America. The struggle for independence, and the rise of the modern Latin American Republics.

361-362. RECENT AMERICAN HISTORY

An investigation and intensive study of some of the major movements of United States history since 1900.

Prerequisite: History 211, 212, 213.

371-372-373. RECENT EUROPEAN HISTORY

Europe and its relations with the rest of the world since 1914: imperialism; the alliance system; World War I; the war debt and reparations problems; the rise of the Soviet Union and the fascist powers; the great depression relations with the Middle-East and the Far-East; World War II; the Cold War.

Prerequisite: History 111, 112, 113.

381. THE WESTWARD MOVEMENT IN THE UNITED STATES

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

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 3 hours
An investigation of the part played by interest and pressure groups and ideologies in the determination and execution of public policies.

421. GOVERNMENT OF THE SOVIET UNION 3 hours
Demographic, historical and ideological basis of Soviet rule. The social and governmental structure. Nationalism and federalism. The Party. Trade unions and cooperatives. The Church, army, courts, prosecutors, and organs of police. Dynamics of power in the U.S.S.R.

422. FOREIGN POLICY OF THE SOVIET UNION 3 hours
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.

423. SOVIET SOCIAL AND ECONOMIC INSTITUTIONS 3 hours
A comparative study of the Soviet economic structure and legislation; general principles of private law, including family law; industrial and trade relations; labor law; and collective farms.

450. POLITICAL SCIENCE PROBLEMS 3 hours
Individual investigation in the field of political science. Open to qualified seniors majoring in this department.

INDUSTRIAL ARTS

ASSOCIATE PROFESSOR KAIN (Chairman), MR. BOWLING

The technological world of the present and future commands a knowledge of materials, products, tools and machines, skills and occupations in order
that one may more intelligently interpret the economic and social environment of which he is a part.

The principal objective of the Department of Industrial Arts is to provide a basic education in applied arts and sciences by encouraging the growth of an understanding of manufacturing, production and consumption, utilizing a variety of materials, processes, operations and procedures.

In the course areas attention is directed toward researching, experimenting, inventing and creative artistry, involving problem-solving situations derived from both theory and practice of the arts and sciences. The courses are organized to provide a basic professional-technical education for persons preparing to teach the arts of industry and technical subjects in the public schools.

This department offers several courses that are of interest and value to both men and women students concentrating in other fields. The recommended courses are: 113 Drawing, 200 Arts and Crafts, 210 Handcrafts for Teachers, 241 Finishing Methods and Materials, 311 Graphic Arts, 323 Lapidary and Jewelry, 430 Photography, 440 Special Problems, and 460 Industrial Materials and Processes. These courses have no prerequisite.

Students concentrating in Industrial Arts are required to complete a minimum of 83 quarter-hours in the areas of drawing, woodworking, metalworking, industrial crafts, graphic arts and printing, electricity-electronics, ceramics, and automotive-power mechanics. Four years of study in these areas and in the areas of liberal arts and professional teacher education qualify students for the Provisional Special Certificate required for teacher certification.

Prospective teachers who do not wish to concentrate in Industrial Arts as a major teaching field but desire to obtain credit sufficient to teach Industrial Arts courses on a minor basis are required to complete a minimum of 45 quarter-hours in the previously listed subject areas. Care should be taken in scheduling in order that courses may be taken in their proper sequence and that sufficient elective time is provided to complete the total credit-hour requirement. Fulfillment of these requirements and those in the field of concentration leads to qualification for the Provisional Teaching Certificate.

An orientation course (101, 3 hours) designed to assist students in adjusting themselves to college life and to develop a better understanding of the profession, is required of all students seeking a major or minor in Industrial Arts. This course must be taken during the freshman year.

The department has developed an extensive program of visits to museums, manufacturing firms and schools. Industrial Arts students are required to participate in these tours and are encouraged to participate also in a variety of organized professional activities.
### INDUSTRIAL ARTS CURRICULUM FOR MAJORS

#### FALL
- English C-1: 3 credits
- Mathematics 111: 3 credits
- Drawing 111: 3 credits
- Industrial Arts 101: 3 credits
- History 111 or 211: 3 credits
- Physical Education: 1 credit

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16 credits

#### FRESHMAN YEAR

##### WINTER
- English C-2: 3 credits
- Mathematics 112: 3 credits
- Drawing 112: 3 credits
- Wood Technology 112: 3 credits
- History 112 or 212: 3 credits
- Physical Education: 1 credit

---

16 credits

#### SPRING
- English C-3: 3 credits
- Mathematics 113: 3 credits
- Drawing 113 (IA): 3 credits
- Carpentry 123: 3 credits
- History 113 or 213: 3 credits
- Physical Education: 1 credit

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16 credits

#### SOPHOMORE YEAR

##### WINTER
- Literature 212 or 202: 3 credits
- American Gov't 202 or Prin. of Economics 201: 3 credits
- Finishing Methods 241: 3 credits
- Furniture Constr. 231: 3 credits
- Chemistry 111 or Physics 221: 4 credits
- Physical Education: 1 credit

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17 credits

##### WINTER
- Literature 213 or 203: 3 credits
- American Gov't 203 or Prin. of Economics 203: 3 credits
- Metal Casting 213: 3 credits
- Study of Music 200: 3 credits
- Chemistry 113 or Physics 223: 4 credits
- Physical Education: 1 credit

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17 credits

#### JUNIOR YEAR

##### WINTER
- Metal Machining 332: 5 credits
- Philosophy C-32: 3 credits
- Printing 322: 3 credits
- Ceramics 221: 3 credits
- Intro. to Education 121: 2 credits

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16 credits

##### WINTER
- Welding 343: 5 credits
- Philosophy C-33: 3 credits
- High Sch. Curi. 390: 3 credits
- Speech 271: 3 credits
- School & Society 370: 3 credits

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17 credits

#### SENIOR YEAR

##### WINTER
- Elec.-Electronics 402: 5 credits
- Laboratory Plan. 412: 3 credits
- Electives in Educ.: 6 credits
- Ceramics 222: 3 credits

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17 credits

##### WINTER
- Ind. Arts Methods 423: 5 credits
- Student Teaching 480: 9 credits
- Special Problems 440 or Elective: 3 credits

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17 credits
101. **Industrial Arts Orientation** 3 hours

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 (B.E. 201)** 3 hours

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

112. **Drawing II (B.E. 202)** 3 hours

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** 4 hours

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.

112. **Wood Technology** 3 hours

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** 3 hours

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** 3 hours

Laboratory experiences in working with a large selection of craft mate-
rial: 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 handicraft techniques and the tools and procedures involved.

210. **HANDICRAFTS FOR TEACHERS**  
3 hours  
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 chosen to meet typical units of study, their construction utilizing available and inexpensive materials.

E-211. **PATTERNMAKING AND FOUNDRY**  
1 hour  
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 segmented 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**  
1 hour  

E-213. **METAL MACHINING**  
1 hour  
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, photography, 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


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

323-324. **Lapidary and Jewelry** 6 hours

Introduction to the fundamentals of the art of lapidary; knowledge of jewelry materials and design. Experiences in working with natural and synthetic stones including the sawing, shaping, polishing, and mounting of jewelry stones.

332. **Metal Machining** 5 hours

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

*Prerequisite:* Metalwork Technology 321.

343. **Welding Theory and Practice** 5 hours

Welding theory, and weld types. Welding metallurgy. Experiences in electrical resistance and arc welding, oxyacetylene welding, brazing, and burning. Welded metal fabrications.
411. FUNDAMENTALS OF ELECTRICITY & ELECTRONICS \hspace{1cm} 5 hours
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 ELECTION \hspace{1cm} 3 hours
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 \hspace{1cm} 5 hours
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 \hspace{1cm} 3 hours
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 \hspace{1cm} 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 \hspace{1cm} 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 \hspace{1cm} 5 hours
The aim of this course is to present a study of industrial materials, their origins, sources, characteristics, uses, and the manufacturing processes in-
volved 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 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 RODABAUGH (Acting Chairman)
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>
</tr>
</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: 15, 5, 5, 5
- 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: 48, 16, 16, 16
(52), (18), (18), (18)

#### 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: 45, 15, 15, 15
(48), (16), (16), (16)

#### 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
- Mathematic 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

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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 number 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; exponents, 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 exercises 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, complex 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 general triangles; trigonometric equations, inverse functions.

Prerequisite: 2 units algebra, 1 unit plane geometry, ½ unit trigonometry; 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; applications to geometry and physics.

Prerequisite: Mathematics 132.

141. CALCULUS AND ANALYTICAL GEOMETRY, I 5 hours
142. CALCULUS AND ANALYTICAL GEOMETRY, II 5 hours
143. CALCULUS AND ANALYTICAL GEOMETRY, III 5 hours
Courses designed for engineering students. For course content see engineering curricula.

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

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

Mean value theorems; indeterminate forms; formulas of integration; areas, volumes; applications; centroids.

Prerequisite: Mathematics 133.

222. CALCULUS III

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

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.

231. CALCULUS IV

5 hours

232. ENGINEERING MATH I

5 hours

233. ENGINEERING MATH II

5 hours

Courses designed for engineering students. For course content see engineering curricula.

283. ELEMENTARY STATISTICS

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 La Place 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.

440. SPECIAL PROBLEMS 1-3 hours
Independent study in special topics. By arrangement any quarter.
MUSIC

PROFESSOR ROIDER (Chairman), ASSOCIATE PROFESSOR MATTHEWS,
ASSISTANT PROFESSOR BYRD, ASSISTANT PROFESSOR GRIGSBY,
MR. WEITZ, MR. ANDERSON, MRS. SPOFFS, 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:

<table>
<thead>
<tr>
<th>FALL</th>
<th>WINTER</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gym</td>
<td>Gym</td>
<td>Gym</td>
</tr>
<tr>
<td>Structure of Music 3</td>
<td>Structure of Music 3</td>
<td>Structure of Music 3</td>
</tr>
<tr>
<td>English Comp. 3</td>
<td>English Comp. 3</td>
<td>English Comp. 3</td>
</tr>
<tr>
<td>*Natural Science 3-4</td>
<td>Natural Science 3-4</td>
<td>Natural Science 3-4</td>
</tr>
<tr>
<td>Foreign Language 4</td>
<td>Foreign Language 4</td>
<td>Foreign Language 4</td>
</tr>
<tr>
<td>Choir-Band-Orch. 1</td>
<td>Choir-Band-Orch. 1</td>
<td>Choir-Band-Orch. 1</td>
</tr>
</tbody>
</table>

*Natural Science requirement for the BA degree in Music suggests mathe-
metics, physics, or a combination of both.

SOPHOMORE YEAR:

<table>
<thead>
<tr>
<th>Gym</th>
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<th>Gym</th>
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</thead>
<tbody>
<tr>
<td>Structure of Music 3</td>
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<td>Structure of Music 3</td>
</tr>
<tr>
<td>Religion Core 3</td>
<td>Religion Core 3</td>
<td>Religion Core 3</td>
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<tr>
<td>Social Science 3</td>
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<td>Social Science 3</td>
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<tr>
<td>Foreign Language 4</td>
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</tr>
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<td>Choir-Band-Orch. 1</td>
</tr>
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</table>
JUNIOR YEAR:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Literature</td>
<td>3</td>
</tr>
<tr>
<td>Social Science</td>
<td>3</td>
</tr>
<tr>
<td>Music History</td>
<td>3</td>
</tr>
<tr>
<td>Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Choral</td>
<td></td>
</tr>
<tr>
<td>Instrumental</td>
<td></td>
</tr>
<tr>
<td>Applied Music</td>
<td>3-4</td>
</tr>
<tr>
<td>Choir-Band-Orch.</td>
<td>1</td>
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<tbody>
<tr>
<td>English Literature</td>
<td>3</td>
</tr>
<tr>
<td>Social Science</td>
<td>3</td>
</tr>
<tr>
<td>Music History</td>
<td>3</td>
</tr>
<tr>
<td>Counterpoint</td>
<td>3</td>
</tr>
<tr>
<td>Choral</td>
<td></td>
</tr>
<tr>
<td>Instrumental</td>
<td></td>
</tr>
<tr>
<td>Applied Music</td>
<td>3-4</td>
</tr>
<tr>
<td>Choir-Band-Orch.</td>
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</tbody>
</table>

SENIOR YEAR:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducting</td>
<td>2</td>
</tr>
<tr>
<td>Class Voice or</td>
<td>2</td>
</tr>
<tr>
<td>Instrumental Class</td>
<td></td>
</tr>
<tr>
<td>Music Problems</td>
<td>3</td>
</tr>
<tr>
<td>Applied Music</td>
<td>3-4</td>
</tr>
<tr>
<td>Choir-Band-Orch.</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
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<th>Credits</th>
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</tr>
<tr>
<td>Applied Music</td>
<td>3-4</td>
</tr>
<tr>
<td>Choir-Band-Orch.</td>
<td>1</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FALL</td>
<td>Gym</td>
<td>3</td>
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<tr>
<td></td>
<td>Structure of Music</td>
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</tr>
<tr>
<td></td>
<td>English Comp.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>*Natural Science</td>
<td>3-4</td>
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<tr>
<td></td>
<td>Western Civ.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Applied Music</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td>Choir-Band-Orch.</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>WINTER</td>
<td>Gym</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Structure of Music</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English Comp.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Natural Science</td>
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<td></td>
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<td></td>
<td>Applied Music</td>
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<table>
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<td>SPRING</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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JUNIOR YEAR:

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<tr>
<td>Choir-Band-Orch.</td>
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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 1—2 hours per quarter

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

20d. STRINGS 1—2 hours per quarter

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 1 hour per quarter

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 1 hour per quarter

All University students who play band instruments are given the oppor-
tunity 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**
   1 hour per quarter
   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**
   1 hour per quarter up to 6 hours
   Enrollment by permission of instructor.

55. **Instrumental Ensemble**
   1 hour per quarter up to 6 hours
   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)**
   3 hours
   Music activities, music materials, and literature, unit planning and teaching methods and skills for the elementary classroom teacher—grades 4-6.

112. **Music for the Elementary Classroom Teacher (Intermediate)**
   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.

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.
CHORUS-CHOIR

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 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 mysticres 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  
   3 hours

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  
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 continue 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

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

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

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

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.

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.
# HEALTH & PHYSICAL EDUCATION

(Curriculum for majors)

## FIRST YEAR

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## FOURTH YEAR

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

112. **First Aid and Safety Education** 3 hours
   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.

120. **Nutrition for Nursing** 2 hours
   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** 3 hours
   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** 3 hours
   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** 3 hours
   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** 3 hours
   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.

213. **Advanced First Aid** 3 hours
   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 Safety Education 112.

223. **Body Mechanics** 3 hours
   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.

*Prequisite:* 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 9 hours

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 fact, 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 the experiment and theory.

The department aims to give a training sufficiently broad to enable the student to appreciate the physics of 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 at least four hours each of 310, 320, and 330; mathematics through 223; and general chemistry should be completed. A reading knowledge of German or French is strongly recommended.

### BASIC CURRICULUM FOR CONCENTRATION IN PHYSICS

#### FRESHMAN YEAR

| Mathematics 131, 132, 133 or 121, 122, 132 | 15 |
| Gen. Chem. 111, 112 | 10 |
| English C-1, C-2, C-3 | 9 |
| Social Sc. Courses | 9 |
| Art 200 or Music 200 | 3 |
| Physical Education | (3) |
| Lib. Arts Orientation | (1) |

**Total** 46

#### SOPHOMORE YEAR

| Mathematics 221, 222, 223 or 133, 221, 222 | 15 |
| Physics 241, 242, 243 | 15 |
| Ph. & Religion C-31, C-32, C-33 | 9 |
| Foreign Language | 12 |
| Physical Education | (3) |

**Total** 51

#### JUNIOR YEAR

| Physics 250, 302, 303 | 11 |
| Foreign Language | 12 |
| Electives | 12 |
| Engl. or Amer. Liter. or Social Science Course | 9 |
| Th. & Adv. Lab. in Phys. 310, 320, 330 | 3-9 |

**Total** 47-53

15-17 17-19 15-17
SENIOR YEAR

Physics 401, 402, 413 or 423  13-15  5  5  3-5
Th. & Adv. Lab. in Phys. 310, 320, 330  3-9  1-3  1-3  1-3
Speech, Music Art  9  3  3  3
Engl. or Amer. Liter. or  
Social Science Course  9  3  3  3
Electives  9  3  3  3

Total  45-51 15-17 14-16 13-15

210. PHYSICS
A lecture and demonstration course of fundamental physical laws in mechanics, heat, electricity, sound, and light for education majors.

Prerequisites: Math 111, 112 or equivalent.

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 133 or to be taken concurrently.

250. ASTRONOMY  3 hours
Study of celestial bodies including distance, motion, size, distribution of planets, stars, extragalactic nebulae, and modern theories regarding their origin and evolution.

Prerequisite: Physics 210 or equivalent.

302. 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 222 or 242.

303. MODERN PHYSICS  3 hours
A lecture and problem course reviewing and applying vectors and differential equations to classical mechanics and electrodynamics. The concepts
involved in quantum mechanics, relativity and statistical mechanics are introduced. Applications of the above fields are presented to atomic physics, macrophysics and astrophysics.

Prerequisites: General Chemistry and Physics 243.

310. THEORY AND ADVANCED LABORATORY: MECHANICS 1-6 hours

320. THEORY AND ADVANCED LABORATORY: LIGHT, HEAT, SOUND 1-6 hours

330. THEORY AND ADVANCED LABORATORY: ELECTRICITY AND NUCLEAR PHYSICS 1-6 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. Offered every quarter.

Prerequisites: Physics one year.

401. ANALYTICAL MECHANICS 5 hours

A course covering the principles of mechanics as applied to statics; also a study of dynamics of particles and bodies.

Prerequisites: Physics 241 and Diff. Eq. 223.

402. ELECTRICITY AND MAGNETISM 5 hours

A study of electric and magnetic fields, dielectrics, inductance, capacitance, direct and alternating current circuits.

Prerequisites: Physics 242 and Diff. Eq. 223.

403. NUCLEAR REACTOR PRINCIPLES 3 hours


Prerequisite: Thermodynamics 301 or equivalent.

413. SOLID STATE 3 hours

A lecture and problems course in the structure of solids and their phenomena. Quantum and statistical mechanics concepts are introduced to develop theories of internal stress and strain in crystals, conductivity of electricity in metals, semiconductors and superconductors, magnetism, the thermal properties of solids and imperfections in solids.

Prerequisite: Modern Physics or permission of instructor.

423. 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.

Prerequisite: Physics 243.
440. **SPECIAL PROBLEMS IN PHYSICS**  
Independent study or research in special topics in physics. By arrangement any quarter.

**SOCIOMETRY AND PSYCHOLOGY**

**Professor Markle (Chairman),**
**Assistant Professor Crider,**
**Associate Professor Miller, Mr. Cohoe**

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**

- Liberal Arts Orientation  
  (1) hour
- C-1-2-3 English  
  9 hours
- 201-202-203 English Literature  
  9 hours
  or
- 211-212-213 American Literature  
- A Foreign Language  
  24 hours
- C-31-32-33 Historical Study of Philosophy and Religion  
  9 hours
- 271 Elements of Speech  
  3 hours
- 200 Introduction to Art  
  3 hours
- 200 Introduction to Music  
  3 hours

**II. NATURAL SCIENCES**

- 111-112-113 Fundamental Mathematics  
  9 hours
- 111-112-113 General Biology  
  12 hours

**III. SOCIAL SCIENCES**

- 201-202-203 American Government  
  9 hours
- 201 General Psychology  
  5 hours
- 321 Social Psychology  
  5 hours
- 201-202-203 Marriage and the Family  
  9 hours
- 321-323 Criminology and Juvenile Delinquency  
  10 hours
- 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  
443  Social Field Work Observation and Orientation  
433  Human Growth and Development  

6 hours  
2-5 hours  
3 hours  

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

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

9 hours  
9 hours  
3 hours  
5 hours  
9 hours  
5 hours  
5 hours  

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**  
A general survey of psychological facts and principles stressing human experience and behavior. Open to qualified freshmen with the consent of the instructor.

3 hours

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

3 hours

223. **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.

3 hours

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.  

5 hours
321. SOCIAL PSYCHOLOGY 5 hours
A study of social behavior and social adjustment. The effect of the social environment upon the development of personality. The relation of social and psychological laws to problems of the community.
Prerequisite: Psychology 201.

323. PSYCHOLOGY OF BUSINESS AND INDUSTRY 3 hours
A study of the principles and applications of psychology as used in business, industry and personnel work.
Prerequisite: Psychology 201.

332. APPLIED PSYCHOLOGY 5 hours
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 5 hours
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 5 hours
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 3 hours
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 3 hours
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  
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  
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  
A study of the phenomena of human relations, including the nature and import of sociology, socialization, social ideals and social control.

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

301. Social Pathology  
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  
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  
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)  
A study of preliterate culture, its relation to geography, biology and psychology. Study of primitive religion, family patterns, and cultural variations.

341. Introduction to Social Welfare  
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  
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  
Introduction to the basic processes used in social work practices; social case work, social group work, and intergroup or community work.
400. **Human Geography**  
The interaction of man and his physical environment.  

5 hours

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

5 hours

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

5 hours

413. **Industrial Sociology**  
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.  

3 hours

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

3 hours

422. **Marriage and Family Counseling**  
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.

5 hours

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

3 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

440. **Social Problems**  
Minor investigation. Open only to qualified seniors by arrangement.  

1-3 hours

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

6 hours

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

2-5 hours
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.
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-three 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 kept at a minimum. 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 advisor and the Dean, while students on probation are required to meet with their advisor 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 urged to belong to 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. 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, Air-Flow Laboratory, A.C. Power Laboratory, D.C. Power Laboratory, Surveying Supply, Senior Design Room, Visual Aid Room, Graphics Laboratory, Machine Shop, Carpenter Shop, Tool Crib, Electronics, and Heating and Ventilating Laboratory.

PROFESSIONAL AND TECHNICAL ORGANIZATIONS

All engineering students are encouraged to belong to and to participate in the professional society and their technical organization in order to complete the graduation requirements. From the beginning each student should 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 embraces 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.

ENGINEERING GRAPHICS

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.
ARTS-ENGINEERING CURRICULA

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.

FRESHMAN AND SOPHOMORE ENGINEERING CURRICULUM

During the first two years all Engineering students follow the same general program. Except for advisory purposes, it is not necessary for the student to select a branch of Engineering until the end of the third quarter of the Sophomore year.

No sharp line of distinction can be drawn in the fundamental education 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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<th>Course</th>
<th>FALL</th>
<th>WINTER</th>
<th>SPRING</th>
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<td>Physical Education (101, 102, 103)</td>
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<td>(1)</td>
<td>(1)</td>
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<tr>
<td>Digital Computation I, II, III (BE 101, 102, 103)</td>
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<td>1</td>
<td>2</td>
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<td>General Chemistry I, II, III (131, 132, 133)</td>
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<td>3</td>
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<td>English Composition I, II, III (C-1,2,3)</td>
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<td>Engineering Math I, II, III (BE 131, 132, 133)</td>
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<td>5</td>
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<tr>
<td>Engineering Physics I, II, III (BE 141, 142, 143)</td>
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<td><strong>Total</strong></td>
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SURVEYING CAMP FOR CIVILS
Surveying I (CE 211)

FALL WINTER SPRING

| Post-Spring 5 hours |

SOPHOMORE YEAR

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<td>Engineering Mechanics I, II, III (BE 211, 212, 213)</td>
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<tr>
<td>Electric Circuits &amp; Electro mechanics I, II, III (BE 221, 222, 223)</td>
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<td>Engineering Laboratory I, II, III (BE 231, 232, 233)</td>
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<td>Engineering Math IV, V, VI (BE 241, 242, 243)</td>
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<tr>
<td>Philosophy &amp; Religion (C-31, 32, 33)</td>
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CIVIL ENGINEERING

DR. MILES, ASSISTANT PROFESSOR WILLIAMSON
ASSISTANT PROFESSOR YALCIN, MR. PHILLIPS

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

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

The Civil Engineering Department offers laboratory work in Testing Materials, Concrete, Soil Mechanics and Fluid Mechanics, as well as field work in Surveying.
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 136 for the program of the Freshman and Sophomore program.

JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<tr>
<td>Statics and Mechanics of Materials I, II</td>
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<td>(C.E. 301, 302, 303)</td>
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<td>Engineering Analysis and Theory of Structures I</td>
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<td>(E. 301, C.E. 313)</td>
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<td>Route Surveying and Plain Concrete (C.E. 331, 333)</td>
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SENIOR YEAR

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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</td>
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<td>(C.E. 421, 422, 423)</td>
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<td>Reinforced Concrete Design I, II (C.E. 422a, 423a)</td>
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<td>Soil Mechanics, Sanitary Engineering, and Cost</td>
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<td>Analysis (C.E. 431, 432, 433)</td>
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<td>Electrical Engineering I, II, III (E.E. 301,302, 303)</td>
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<td>Engineering Law (E. 403)</td>
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ELECTRICAL ENGINEERING

PROFESSOR KLINGENBERGER, LECTURER ÅLDEN, MR. TSENG

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 co-ordinated 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 first 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.

Students conducting an experiment on a generalized machine in the machine laboratory

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 136 for the program of the Freshman and Sophomore program.

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
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<td>Alternating Current Circuits I, II and Communication</td>
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<td>Circuits I (E.E. 311, 312, 313)</td>
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<td>Engineering Analysis and Electronics I</td>
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<td>Thermodynamics, Dynamics, and Heat Transfer</td>
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<td>Nuclear Physics (403)</td>
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**SENIOR YEAR**

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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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MECHANICAL ENGINEERING

ASSOCIATE PROFESSOR JENNINGS, PROFESSOR HORLDT, ASSISTANT PROFESSOR BURTON, MR. FARRINGTON

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.

INTERNAL COMBUSTION ENGINE LABORATORY

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

The Steam Power Laboratory has a steam boiler, pump, engine, and two turbines with other necessary accessories for tests of each unit. The Engine Laboratory contains dynamometers for the 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 136 for the program of the Freshman and Sophomore program.

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>FALL</th>
<th>WINTER</th>
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<td>Statics and Mechanics of Materials I, II</td>
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<tr>
<td>(CE 301, 302, 303)</td>
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<td>Thermodynamics I, II, III (ME 311, 312, 313)</td>
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<td>Engineering Analysis, Dynamics and Kinematics (E 301, ME 322, 323)</td>
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<td>(ME 341, 342, 343)</td>
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| **Total**                                                             | 18   | 19     | 19     |

**SENIOR YEAR**

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<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>ME Laboratory IV, V, VI (ME 431, 432, 433)</td>
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<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>Social Science Elective</td>
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| **Total**                                                             | 18   | 18     | 18     |

* 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.
DESCRIPTION OF COURSES
BASIC ENGINEERING

BE 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, those that are 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, trigonometry, and analytical geometry.
Students who do not place sufficiently high on mathematics placement tests during Summer Orientation are required to take this course during the Fall Quarter. The basic purpose is to prepare the student to start the calculus.

BE 101. DIGITAL COMPUTATION I (1 + 0)* 1 hour
Prerequisite: BE 131 or concurrently.

BE 102. DIGITAL COMPUTATION II (1 + 0) 1 hour
Continuation of BE 101.
Prerequisite: BE 132, or concurrently, BE 101.

BE 103. DIGITAL COMPUTATION III (2 + 0) 2 hours
Continuation of BE 102.
Prerequisite: BE 133 or concurrently, BE 102.

BE 131. ENGINEERING MATH I (5 + 0) 5 hours
(Same as Math 141)

BE 132. ENGINEERING MATH II (5 + 0) 5 hours
(Same as Math 142)

BE 133. ENGINEERING MATH III (5 + 0) 5 hours
(Same as Math 143)

BE 141. ENGINEERING PHYSICS I (4 + 2) 5 hours
(Same as Physics 241)

BE 142. ENGINEERING PHYSICS II (4 + 2) 5 hours
(Same as Physics 242)

BE 143. ENGINEERING PHYSICS III (4 + 2) 5 hours
(Same as Physics 243)

BE 201. ENGINEERING GRAPHICS I (0 + 4) 2 hours
Lettering, use of instruments, applied geometry, orthographic projection, sketching, pictorial sketching, dimensioning.
*Note: (1 + 0) indicates one hour lecture per week and zero indicates the number of hours in laboratory per week.
BE 202. ENGINEERING GRAPHICS II (0 + 4)  2 hours
Advanced orthographic projection, descriptive geometry: point, line, plane problems, curved surfaces, developments, intersections, perspective.  
Prerequisite: BE 201.

BE 203. ENGINEERING GRAPHICS III (0 + 4)  2 hours
A course applying principles of Engineering Graphics I and II to a particular field of interest to the individual student. Projects of machine drawing, schematic and wiring diagrams, mapping and/or structural detail are used.  
Prerequisite: BE 201, 202.

BE 211. ENGINEERING MECHANICS I (3 + 0)  3 hours
Introduction to basic engineering mechanics covering the fundamental principles of statics and dynamics. Statics, kinetics, and dynamics of translation and rotation of particles using the vector approach.  
Prerequisite: BE 133, 143.

BE 212. ENGINEERING MECHANICS II (3 + 0)  3 hours
Continuation of BE 211. Mechanics of rigid bodies. Same principles stated for BE 211 as applied to rigid bodies. Nonconcurrent force systems. Center of mass, center of gravity and moment of inertia of rigid bodies.  
Prerequisite: BE 211.

BE 213. ENGINEERING MECHANICS III (3 + 0)  3 hours
Prerequisite: BE 212.

BE 221. ELECTRIC CIRCUITS AND ELECTROMECHANICS I (3 + 0)  4 hours
Direct current circuit theory followed by presentation of a-c circuits as a problem in differential equation theory. Kirchoff's laws, loop-current and node-voltage analysis, network geometry and theorems, circuits with energy storage, initial conditions, transient and steady-state response, phasors and general steady-state analysis of a-c circuits.  
Prerequisite: BE 143.

BE 222. ELECTRIC CIRCUITS & ELECTROMECHANICS II (3 + 3)  4 hours
A continuation of BE 221 and an introduction to electromechanics. Energy distribution and polyphase circuits, nonsinusoidal waveforms, power measurements in a-c circuits. Mechanical force-Ampere's Law, electromotive force-Faraday's Law, electromechanical energy relations, the commutator machine and the synchronous machine.  
Prerequisite: BE 221.
BE 223. **Electric Circuits & Electromechanics III** (3 + 3) 4 hours
A continuation of BE 222. Transformers, induction motors, transfer functions, types of functions and responses, examples of dynamic operation, induction devices and electromechanical systems.
*Prerequisite:* BE 222.

BE 231. **Engineering Laboratory I** (0 + 3) 1 hour
Basic instrumentation: pressure, temperature, mass, time, and power. The scheduling of this sequence is flexible and an investigation listed here may appear in BE 232 or 233.
*Prerequisite:* BE 143.

BE 232. **Engineering Laboratory II** (0 + 3) 1 hour
Engineering mechanics: force systems, vibration, destructive testing. The scheduling of this sequence is flexible and an investigation listed here may appear in BE 231 or 233.
*Prerequisite:* BE 143.

BE 233. **Engineering Laboratory III** (0 + 3) 1 hour
Digital computer project: An investigation in a field of interest to the student requiring the use of digital computation. It is expected that the choice of subject will be made in BE 231 and the preliminary investigation completed in BE 232. An equivalent amount of work from BE 231 and BE 232 will be scheduled in BE 233.
*Prerequisite:* BE 103, 143.

BE 241. **Engineering Math IV** (5 + 0) 5 hours
(Same as Math 241)

BE 242. **Engineering Math V** (5 + 0) 5 hours
(Same as Math 242)

BE 243. **Engineering Math VI** (5 + 0) 5 hours
(Same as Math 243)

**Civil Engineering**

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

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

Prerequisite: Mathematics 223 and Physics 241.

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

Prerequisite: C.E. 301.

CE 303. MECHANICS OF MATERIALS II. (5 + 0) 5 hours
Beams with more than two supports, shear in beams, special beams, bending combined with tension or compression, resilience in bending or shear, combined stresses, theory of elastic limit or failure, curved beams and hooks.

Prerequisite: C.E. 302.

CE 313. THEORY OF STRUCTURES I (3 + 0) 3 hours
Analysis of simple beams, frames and trusses by analytical and graphical methods. Influence lines and moving loads.

Prerequisite: CE 303 or concurrent therewith.

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

Prerequisite: C.E. 301.

CE 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.

CE 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.

CE 333. CONCRETE AND BITUMINOUS MATERIALS (1 + 3)
Characteristics and design of Portland cement concrete and bituminous concrete mixes; physical properties of constituent materials.

Prerequisite: Junior standing.

CE 401. THEORY OF STRUCTURES II (3 + 0) 3 hours
Continuation of the use of influence lines for the analysis of highway
and railway bridges. Approximate analysis of statically indeterminate structures. Introduction to finding deflections of structures.

**Prerequisite:** CE 313.

**CE 402. STATICALLY INDETERMINATE STRUCTURES** (3 + 0) 3 hours
Continuation of finding the deflections of structures. Analysis of statically indeterminate structures by the method of super-position, Castigliano's second theorem, virtual work, shape deflection, moment distribution. Column analogy.
**Prerequisite:** CE 401.

**CE 401. STRUCTURAL DESIGN I** (0 + 6) 2 hours
The elements of structural design in steel and light gage metals. Tension members, compression members. Riveted and welded connections. Design and drawings of a steel roof truss. Introduction to timber design.
**Prerequisite:** CE 313.

**CE 412. STRUCTURAL DESIGN II** (0 + 6) 2 hours
Rolled beams and girders. Design and drawing a plate girder railroad road highway bridge.
**Prerequisite:** CE 401, 411.

**CE 413. STRUCTURAL DESIGN III** (0 + 6) 2 hours
Design and drawings of a tall building. Moment resisting wind connections. Introduction to plastic design in steel.
**Prerequisite:** CE 412.

**CE 420a. ADVANCE STRUCTURAL MECHANICS** (3 + 0) 3 hours
**Prerequisite:** CE 402.

**CE 421. REINFORCED CONCRETE I** (3 + 0) 3 hours
Principles of elastic design of structural elements including beams, columns, and slabs. An introduction to ultimate strength design of beams and columns.
**Prerequisite:** CE 313, 333.

**CE 422. REINFORCED CONCRETE II** (2 + 0) 2 hours
A continuation of CE 421; design of footings and retaining walls; an introduction to arch and bridge design.
**Prerequisite:** CE 421.

**CE 422a. REINFORCED CONCRETE DESIGN I** (0 + 6) 2 hours
Design of concrete structures with emphasis on structural design of buildings; details.
**Prerequisites:** CE 421 and concurrent with CE 422.
CE 423. PRESTRESSED CONCRETE (2 + 0) 2 hours
Principles of linear prestressing; study of materials used in prestressed concrete; design of simple beams on the bases or ultimate stresses and working loads; design of continuous prestressed concrete beams.
Prerequisite: CE 422.

CE 423a. REINFORCED CONCRETE DESIGN II (0 + 3) 1 hour
Students choice of problem dealing with investigation and design of a concrete structure; to develop student initiative and technique under general supervision.
Prerequisite: CE 422, 422a.

CE 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, 303.

CE 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.

CE 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.

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

ELECTRICAL ENGINEERING

EE 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.

EE 302. ELECTRICAL ENGINEERING II (2 + 3) 3 hours
For students not majoring in Electrical Engineering. This course com-
prises 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.

EE 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.

EE 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.

EE 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.

EE 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.

Prerequisite: EE 312.

EE 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.

EE 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.

EE 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.

EE 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.

EE 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.

EE 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.

EE 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.

EE 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.

EE 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.

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

EE 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.
EE443. 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.

EE 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.

EE 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

ME 301. THERMODYNAMICS (4 + 0) 4 hours
For non-mechanicals. Fundamentals and basic applications of thermodynamics.
Prerequisite: Chemistry 113, Mathematics 223, Physics 243.

ME 303. HEAT TRANSFER (3 + 0) 3 hours
For non-mechanicals. Fundamentals and basic applications of heat transfer.
Prerequisite: Physics 243.

ME 311. THERMODYNAMICS I (4 + 0) 4 hours
Fundamentals of thermodynamics: first and second laws and their consequences.
Prerequisite: Physics 243.

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

ME 313. THERMODYNAMICS III (3 + 0) 3 hours
Advanced topics: fluid flow and combustion.
Prerequisite: M.E. 312.

ME 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.

**ME 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.

**ME 331. MECHANICAL LABORATORY I (0 + 3) 1 hour**
Fundamental mechanical laboratory sequence: specific experiments involving measurements, instrumentation, calibration, and analysis of experimental accuracies. Concurrent small-team investigative projects of timely interest.

*Prerequisite:* Phys. 243.

**ME 332. MECHANICAL LABORATORY II (0 + 3) 1 hour**
Continuation of M.E. 331.

**ME 333. MECHANICAL LABORATORY III (0 + 3) 1 hour**
Continuation of M.E. 332.

**ME 341. FLUID MECHANICS (3 + 0) 3 hours**
Theoretical: fluid statics and dynamics, friction, dimensional analysis, and potential flow.

*Prerequisite:* Physics 243.

**ME 342. HEAT TRANSFER I (3 + 0) 3 hours**
Heat and momentum transfer—similar treatment for convection in fluid systems; introduction to mass transfer; heat transfer in stationary systems; steady and transient conduction.

*Prerequisite:* Physics 243, Mathematics 223.

**ME 343. HEAT TRANSFER III (3 + 0) 3 hours**
Heat and mass transfer—convection in multiphase systems; radiation; heat exchangers.

*Prerequisite:* ME 341, 342.

**ME 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.

**ME 410c. INTERNAL COMBUSTION ENGINES (3 + 0) 3 hours**
Fundamentals of spark—and compression—ignition engines and internal combustion processes.

*Prerequisite:* M.E. 313.
ME 411. DESIGN OF MACHINE ELEMENTS I  \( (3 + 3) \)  \( 4 \text{ hours} \)
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, C.E. 303.

ME 412. DESIGN OF_MACHINE ELEMENTS II  \( (3 + 3) \)  \( 4 \text{ hours} \)
A continuation of M.E. 411.
Prerequisite: M.E. 411.

ME 413. MACHINE DESIGN  \( (3 + 6) \)  \( 5 \text{ hours} \)
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.

ME 420c. AIR CONDITIONING  \( (3 + 0) \)  \( 3 \text{ hours} \)
Estimating loads, heating systems and equipment, refrigerating systems and equipment, ducting and air conditioning.
Prerequisite: M.E. 313, 342.

ME 421. MECHANICAL VIBRATION  \( (4 + 0) \)  \( 4 \text{ hours} \)
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.

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

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

ME 430c. TURBOMACHINES  \( (3 + 0) \)  \( 3 \text{ hours} \)
Velocity vector, energy relationships, and similarity parameters for fans, pumps, compressors, turbines, fluid couplings, and torque converters.
Prerequisite: M.E. 422.

ME 431. MECHANICAL LABORATORY IV  \( (0 + 3) \)  \( 1 \text{ hour} \)
Applied mechanical laboratory sequence; specific test projects on engines,
fluid handling machines and environmental conditioning apparatus. Concurrent investigative projects of an individual interest and nature. Stressed development of the art of communication in reporting on laboratory work.

ME 432. MECHANICAL LABORATORY V (0 + 3)  \hspace{1cm} 1 hour
Continuation of ME 431.

ME 433. MECHANICAL LABORATORY VI (0 + 3)  \hspace{1cm} 1 hour
Continuation of ME 432.

ME 440c. HEAT POWER (3 + 0)  \hspace{1cm} 3 hours
Modern power plants and equipment; heat balances. An introduction to supercritical and nuclear power plants. The economics of power systems.
Prerequisite: M.E. 313, 343.

ME 450c. TOOL ENGINEERING (2 + 3)  \hspace{1cm} 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.
Prerequisite: M.E. 412.
c: Taught upon sufficient demand.

MECHANICAL LABORATORY
PERFORMANCE TEST OF A TURBO-BLOWER (Cradle Dynamometer).

This type of blower is used where high velocities and high efficiencies are needed.
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.

PHARMACY BUILDING
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 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. To enter the College of Pharmacy an applicant must furnish to the committee on admissions of the College of Pharmacy proof of satisfactory completion of 45 term hours, or 30 semester hours, with an accumulative
grade point average of 2.0 ("C" average). Further, the applicant must have completed the requirements (or their equivalent) as listed in the Pharmacy Catalog under Pre-pharmacy Curriculum.

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 or modified 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. (A student is permitted only one quarter on warning. If a student who has been on warning, even though he has been removed, allows his accumulative point average to fall below 2.0, he will be placed on probation).

After being suspended for a period of not less than two academic quarters, a student may apply for re-admission to the committee on admissions of the College of Pharmacy. 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 by the time set by the scholarship committee of the College of Pharmacy, or be subject to permanent dismissal.

Any student on probation may have restrictions placed on his social, intramural and extra curricular activities by the scholarship committee of the College of Pharmacy.

A student placed on probation may be continued on probation if in the term following the above action a 2.0 point or better average is made.
Students who fail to obtain a 2.0 point or better term average when on continued probation will be subject to suspension.

Students placed on suspension may have their case reviewed by the Scholarship Committee of the College of Pharmacy. If allowed to re-enter they must make better than a 2.0 point average the following term and comply with the actions imposed by the Scholarship Committee of the College of Pharmacy. Students re-entering under the above action who fail to comply with the above will be subject to suspension for a period of three academic quarters or one academic year.

(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 candidate for a degree:

1. Must successfully pass an English Proficiency test.
2. Must have visited at least two (2) pharmaceutical manufacturing companies during enrollment in the college.
3. Must be of good moral character.
4. Must have completed not less than 240 term hours of acceptable course work and 6 term hours of physical education.
5. Must have maintained an overall 2.0 quality point average and have an accumulative quality point average of 2.1 in all major courses of Pharmacy, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology and Pharmacy Administration.

**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 forty (240) term hours plus six (6) terms or quarters of physical education.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>FALL</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Physical Education</td>
<td>0</td>
<td>Chemistry 122</td>
<td>5</td>
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<tr>
<td>English C-1</td>
<td>3</td>
<td>Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 121</td>
<td>5</td>
<td>Pharmacy Orientation 102</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry 121</td>
<td>5</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Social Studies</td>
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<td></td>
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<tr>
<td>Pharmacy Orientation 101</td>
<td>1</td>
<td>Physical Education</td>
<td>0</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Mathematics 283</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>Chemistry 123</td>
<td>5</td>
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<tr>
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<td>Social Studies</td>
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<td></td>
<td></td>
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<tr>
<td>WINTER</td>
<td></td>
<td>SPRING</td>
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<tr>
<td>Physical Education</td>
<td>0</td>
<td></td>
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</tr>
<tr>
<td>English C-2</td>
<td>3</td>
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<tr>
<td>Mathematics 122</td>
<td>5</td>
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</table>
### SECOND YEAR

#### FALL
- Physical Education: 0
- Chemistry 211: 4
- Physics 221: 4
- Biology 111: 4
- Philosophy Core C-31*: 3
- Philosophy 201*: 15

#### SPRING
- Physical Education: 0
- Chemistry 213: 4
- Physics 223: 4
- Biology 113: 4
- Philosophy Core C-33*: 3
- Ethics 203*: 15

#### WINTER
- Physical Education: 0
- Chemistry 212: 4
- Physics 222: 4
- Biology 112: 4

*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

#### FALL
- Pharmacognosy 211: 4
- Pharmaceutical Chem. 321: 4
- Physiology 331: 4
- Pharmacy 220*: 3
- Accounting 131*: 3
- Pharmacy 220*: 3
- First Aid 112*: 3
- 15 or 18

#### WINTER
- Pharmacognosy 212: 4
- Pharmaceutical Chem. 322: 4
- Physiology 332: 4

#### SPRING
- Pharmacognosy 213: 4
- Pharmaceutical Chem. 323: 4
- Physiology 333: 4
- Pharmacy 220*: 3
- Speech 271*: 3
- 15 or 18

*Pharmacy 220, Accounting 131, First Aid 112, and Speech 271 will be offered each term. Classes will be limited in number.


**FOURTH YEAR**

<table>
<thead>
<tr>
<th>FALL</th>
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<tbody>
<tr>
<td>Pharmacy 210</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bacteriology 321</td>
<td>4</td>
<td></td>
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<tr>
<td>Pharmaceutical Chem. 421</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pharmacy Admin. 310*</td>
<td>3</td>
<td></td>
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<tr>
<td>Elective*</td>
<td>2 or 3</td>
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<td></td>
<td><strong>16 or 17</strong></td>
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</table>

**SPRING**

| Pharmacy 302          | 4              |
| Bacteriology 323      | 3              |
| Pharmaceutical Chem. 423 | 3            |
| Pharmacy Admin. 420*  | 3              |
| Pharmacology 323      | 1              |
| Elective*             | 3              |
|                       | **17**         |

**WINTER**

| Pharmacy 301          | 4              |
| Bacteriology 322      | 4              |
| Pharmaceutical Chemistry 422 | 3  |
| Pharmacology 322      | 1              |

*Pharmacy Administration or electives may be taken during the fourth or fifth year. Pharmacy administration courses 310, 410 and 420 will be scheduled each term.

**FIFTH YEAR**

<table>
<thead>
<tr>
<th>FALL</th>
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<tbody>
<tr>
<td>Pharmacy 401</td>
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<tr>
<td>Pharmacology 421</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Chem. 431</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pharmacy 320</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td><strong>17</strong></td>
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</tbody>
</table>

**SPRING**

| Pharmacy 403          | 4              |
| Pharmacology 423      | 5              |
| Pharmaceutical Chem. 433 | 3            |
| Pharmacy 440          | 3              |

**WINTER**

| Pharmacy 402          | 4              |
| Pharmacology 422      | 5              |
|                       | **17**         |

**ELECTIVES:** All elective courses may be elected from the divisions of humanities, natural sciences, or social sciences in the College of Liberal Arts and approved by the department involved and the College of Pharmacy student advisor or professional electives.

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:

<table>
<thead>
<tr>
<th>Advanced First Aid 113</th>
<th>3</th>
<th>Virology 423</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacognosy 411</td>
<td>2</td>
<td>Parasitology 413</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacognosy 413</td>
<td>2 or 3</td>
<td>Pharmacognosy 430</td>
<td>3</td>
</tr>
<tr>
<td>Pharmacology 430</td>
<td>2</td>
<td>Pharmacy 420</td>
<td>3</td>
</tr>
<tr>
<td>Pharmaceutical Chemistry 410</td>
<td>2</td>
<td>Pharmacy 430</td>
<td>3</td>
</tr>
</tbody>
</table>
All 450 courses are "Problems Courses" and are given in Bacteriology and the five divisions of the Pharmacy College. These courses are open to those students of acceptable standing. In no case will a student be admitted to such a course if he has less than a 2.5 accumulative point average.

DESCRIPTION OF COURSES

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

BACTERIOLOGY

123. **INTRDUCtORY BACTERIOLOGY** 3 + 2

A course in the fundamentals of general and medical microbiology for students in the nursing program.  

**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  4 hours

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. Leptovetsky**

323. **PUBLIC HEALTH FOR PHARMACISTS** 3 hours

A study of epidemiology, geriatrics, industrial disorders and diseases, and community health problems.  

**Dr. Lepovetsky**

Bacteriology Laboratory
413. PARASITOLOGY
The principal helminthic infestations of man and domestic animals are discussed.
Prerequisite: Bacteriology 322.
Given in odd years only.

423. VIROLOGY
Viral and rickettsial infections of man are studied.
Prerequisite: Bacteriology 322.

450. BACTERIOLOGY PROBLEMS
A minor investigation course designed to familiarize qualified fifth year students 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.
Prerequisite: 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 121, 122, 123, 211, 212 and 213 or the equivalents. Additional courses in chemistry may be elected upon approval of the College of Pharmacy student advisor.
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 76. 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 at 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 College of Pharmacy student advisor. 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 121, 122, and 283 or their equivalents and a specially designed course in Pharmacy Arithmetic described as Pharmacy 220.

Students desiring to pursue a major in chemistry should take additional courses in mathematics, subject to approval by the College of Pharmacy student advisor. 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.

PHARMACEUTICAL CHEMISTRY

321. PHARMACEUTICAL ANALYSIS 3 + 4

A study of the gravimetric and volumetric procedures and theory, and their application to pharmaceutical analyses.

Prerequisites: Chemistry 111, 112, 123.

Drs. Smith and Grabowski

322. PHARMACEUTICAL ANALYSIS 3 + 4

A continuation of volumetric procedures and theory. Quantitative methods applied to the chemical assay of crude drugs and of official preparations.

Prerequisites: Chemistry 211, 212, 213. Pharmaceutical Chemistry 321.

Drs. Smith and Grabowski

323. PHARMACEUTICAL ANALYSIS 3 + 4

A continuation of Pharmaceutical Chemistry 322 with an introduction to instrumental methods.

Prerequisites: Pharmaceutical Chemistry 322.

Drs. Smith and Grabowski
421. Biopharmaceutics 3 + 0
A beginning course in the composition of organisms, their inorganic and organic requirements, and a general discussion of the character of carbohydrates, proteins and lipids.

Prerequisites: Chemistry 211, 212, and 213.

Staff

422. Biopharmaceutics 3 + 0
A study of the chemistry and metabolism of carbohydrates, proteins, lipids, enzymes and vitamins.

Prerequisite: Pharm. Chem. 421.

Staff

423. Biopharmaceutics 3 + 0
A study of the chemistry, endocrinology and metabolism of steroids and hormones.

Prerequisite: Pharm. Chem. 422.

Staff

431. Chemistry of Inorganic Medicinal Products 5 + 0 5 hours
A study of the chemical properties, solubilities, tests for identification and purity, and medicinal properties.

Prerequisites: Pharmaceutical Chemistry 321, 322, 323.

Drs. Smith and Grabowski

432. Chemistry of Organic Medicinal Products 5 + 0 5 hours
A study of the structural relationships, the synthesis and chemical properties of medicinal products.

Prerequisites: Pharmaceutical Chemistry 323 and Chemistry 213.

Drs. Smith and Grabowski
433. **Chemistry of Organic Medicinal Products** 5 + 0 5 hours
   A study of the structural relationships, the synthesis and chemical properties of medicinal products.
   **Prerequisities:** Pharmaceutical Chemistry 432.
   **Drs. Smith and Grabowski**

450. **Chemistry Problems** (el) 1 to 3 hours
   The title and character of the course is dependant upon the problem. This course is designed to stimulate introductory research work. Open to fifth year students only.
   **Staff**

410. **Chromatographic Analysis** (el) 2 hours
   A study of the various types of Chromatographic Analysis.
   **Staff**

**PHARMACOCOOGNSY**

211. **General Pharmacognosy** 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.
   **Prerequisities:** Biology 111, 112, 113 and Chemistry 121, 122, and 123.
   **Dr. Koffler**

213. **General Pharmacognosy** 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**

212. **General Pharmacognosy** 3 + 3 4 hours
   A continuation of General Pharmacognosy 211.
   **Dr. Koffler**

411. **Review of Current Pharmacognosy Literature** 2 + 0 (el) 2 hours
   A review of recent literature, books, and articles in the field of Pharmacognosy.
   **Dr. Koffler**

413. **Allergenic Plants, Allergy and Allergens** 2 + 0 or 2 + 3 (el) 2 or 3 hours
   A study of plants causing allergies and of the mechanism of allergy. Pollen and mold spore counts are made.
   **Dr. Koffler**
430. Special Pharmacognosy Methods 1 + 6
(One class period and two 3-hour lab. periods)
Microscopic and microchemical methods of evaluation, isolation and identification of crude drug constituents are studied. Dr. Koffler

450. Pharmacognosy Problems (el) 1 to 3 hours
A special problems course. Small research projects in Pharmacognosy are carried out. Students may also work on problems of cultivation of medicinal plants. Dr. Koffler

PHARMACOLOGY

133. Pharmacology 3 + 2
An elementary general course in Pharmacology for students in the nursing program. Mr. Gorby

321. Biologicals
A study of the biological preparations used in pharmacy, their sources, uses, storage and standards. Dr. Bianchi

322. Biologicals
A continuation of 321. Dr. Bianchi

323. Biologicals
A continuation of 322. Dr. Bianchi

421. Pharmacology 4 + 3
Introduction, vocabulary and terminology used in pharmacology are discussed. The carthartics, cholagogues, choleretics, antacids, digestants, anthelmintics, local anti-infectives, sulfonamides and related compounds, antibiotics, anti-fungal agents and biological preparations are considered. Lab-
ory experiments are related to the lectures of the quarter.

Prerequisites: Physiology 331, 332, and 333. Pharmacognosy 211, 212, and 213.

422. Pharmacology 4 + 3

Local anesthetics, central nervous system stimulants and depressants, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, antispasmedics, psycholeptics, psychoanaleptics and psychodyseleptics are studied. Experiments in the laboratory are related to the lectures of the quarter.

Prerequisites: Pharmacology 421.

423. Pharmacology 4 + 3

A study of histamines, antihistamines, drugs affecting the hematopoietics system, cardiovascular drugs, hormones, drugs acting on the endocrine glands, diuretics, vitamins, diagnostic aids and general principles of toxicology is considered. Laboratory experiments are related to lectures of the quarter with some emphasis on methods of pharmacological testing.

Prerequisites: Pharmacology 422.

430. Pharmacology (Toxicology) 2 + 0 (el) 2 hours

The general Principles of Toxicology. The toxic effects, signs of poisoning, antidotal measures and current pharmaceutical agents used to treat poisonings are considered.

Prerequisites: Pharmacology 423.

450. Pharmacology (el) 1 to 3 hours

A special course to stimulate interest in research in this field. Open only to fifth year students, with the approval of the instructor.
PHARMACY

101-102-103. PHARMACY ORIENTATION  1 + 0  3 hours
   This course is designed to acquaint the student with the educational and
legal requirements of the profession of pharmacy, its organizations, and the
many areas of service open to those who are properly qualified.

   STAFF

210. INTRODUCTION TO PHYSICAL PHARMACY  3 + 3  4 hours
   The physical and chemical theories that are considered to be basic to a
clear understanding of the science of pharmacy are presented in this course.
In-so-far-as possible, the laboratory will apply to the theoretical problems.
Prerequisites: Chemistry 121, 122, 123, 211, 212, and 213; and Pharmacy
220.

   DR. NEWCOMB AND LEE

220. PHARMACY CALCULATIONS  3 + 0  3 hours
   A course in the arithmetic that pertains to pharmacy covering the subjects
of weights and measures, density, percentage, discounts and related subjects.

   DEAN SMITH AND STAFF

301. PHARMACEUTICAL PREPARATIONS  3 + 3  4 hours
   This course is concerned with the manufacture of official solutions, sus-
spensions and other liquid medications. Emphasis is given to an understand-
ing of the chemistry and/or physics involved in making the above prepara-
tions and to the correct procedures of manufacture, packaging and labeling.
Prerequisites: Pharmacy 210 and 220.

   DR. NEWCOMB AND LEE

302. PHARMACEUTICAL PREPARATIONS  3 + 3  4 hours
   This course is a continuation of Pharmacy 301. It includes the manufac-
turing of solid and semi-solid preparations such as ointments, pastes, capsules,
tablets and related products.
Prerequisites: Pharmacy 301.

   DR. NEWCOMB AND LEE

320. HISTORY OF PHARMACY  3 + 0  3 hours
   The course is designed to show the place of pharmacy in Western
civilization. Emphasis is given to the educational, organizational, and pro-
fessional growth and development of pharmacy in the United States, which
is a member of the health professions.
Prerequisites: Pharmacy 301 and 302.

   DR. LEE
401. PHYSICAL PHARMACY 3 + 3 4 hours
Prerequisites: Pharmacy 210, 220, 301, 302 and Pharmaceutical Chemistry 321, 322, and 323.

Drs. Newcomb and Lee

402. PRESCRIPTION PRACTICE
Prerequisites: Pharmacy 401.

Drs. Newcomb and Lee

403. PRESCRIPTION PRACTICE 3 + 3

403. PRESCRIPTION PRACTICE II 3 + 3
Prescriptions involving percentage and ophthalmic solutions, ointments, emulsions, suspensions, and suppositories. Continuation of the study of commercial specialties. Sustained release dosage forms.
Prerequisites: Pharmacy 402.

Drs. Newcomb and Lee

410. COSMETICS 2 + 3 (el) 3 hours
Formulation, preparation, and packaging of the more common types of cosmetics.
Prerequisites: Pharmacy 301, and 302.

Staff
420. **Inorganic Pharmaceutical Preparations** 2 + 3 (el) 3 hours
The course includes the manufacture of a number of the more complex medicinal products. The assignments will involve library assignments and reports.
*Prerequisites:* Pharmacy 301 and 302.

**STAFF**

430. **Pharmacy Professional and Pharmaceutical Ethics** 3 + 0 (el) 3 hours
The course is designed to study the development and place of ethics in business and professional practice. It will include library assignments and reports.
*Prerequisites:* Pharmacy 301, 302, and 320.

**DR. LEE**

440. **Advanced Survey** 3 + 0 3 hours
A technical survey of the latest U.S.P. and N.F. prerequisites. The correlation and use of general chemistry, qualitative and quantitative analysis, organic chemistry, pharmacognosy, pharmacology and pharmacy as used in the U.S.P. and N.F.
*Prerequisites:* Fifth year standing.

**DR. SMITH**

450. **Pharmacy Problems** (el) 1—3 hours
The course is designed for those students who are interested in research.

**STAFF**

### 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
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.

*Mr. Benton*

**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 description under "Physics" in another section of this catalog.

**Physiology**

All students are required to complete at least three terms of Physiology. A description of these courses is listed under Biology elsewhere in this catalog.
College of Law

EUGENE N. HANSON, Dean

In addition to the colleges whose courses are listed in this catalog, Ohio Northern University also maintains a College of Law on its campus. This college is accredited by the American Bar Association and is a member of the League of Ohio Law Schools. It offers a three-year program leading to the degree of Bachelor of Laws. Its graduates are eligible to take the bar examination in practically all of the states by virtue of its accreditation by the American Bar Association.

The College of Law requires that all entrants have a Bachelor's degree. Inquiries concerning eligibility for admission and requests for the Law School catalogue should be directed to the Dean of the College of Law.

The following is the outline of courses taken during the three year program:

<table>
<thead>
<tr>
<th></th>
<th><strong>FALL QUARTER</strong></th>
<th><strong>HOURS</strong></th>
<th><strong>SPRING QUARTER</strong></th>
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<tr>
<td>Legal History</td>
<td>3</td>
<td>Real Property I</td>
<td>5</td>
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<td>Contracts I</td>
<td>4</td>
<td>Torts II</td>
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<td>Personal Property</td>
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<td>SPRING QUARTER</td>
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<tr>
<td>Torts I</td>
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<td>Business Associations</td>
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<td>Real Property II</td>
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<tr>
<td>WINTER QUARTER</td>
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<td>Moot Court</td>
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<td>Contracts II</td>
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<td>Legal Bibliography</td>
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<td>Constitutional Law I</td>
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<td>Electives</td>
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<td>WINTER QUARTER</td>
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<td>Constitutional Law II</td>
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<td>Procedure II</td>
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<td>Evidence I</td>
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<td>SPRING QUARTER</td>
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<tr>
<td>Procedure III</td>
<td>3</td>
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<tr>
<td>Evidence II</td>
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<td>Private Corporations</td>
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<tr>
<td>Electives</td>
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Students hold appellate arguments and practice trials in the Courtroom of the College of Law.
### THIRD YEAR

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<th>FALL QUARTER</th>
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<td>Practice Court I</td>
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<td>Commercial Transactions 3</td>
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<tr>
<td>Legal Ethics</td>
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<td>Electives 5-8</td>
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<td>Electives</td>
<td>12-14</td>
<td>SPRING QUARTER</td>
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<td>WINTER QUARTER</td>
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<tr>
<td>Trusts</td>
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<td>Wills 4</td>
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<tr>
<td>Practice Court II</td>
<td>1‡</td>
<td>Commercial Transactions 5</td>
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- *Courses are required for graduation but no credit hours are given toward the 124 hours required for graduation.
- ‡This course is graded with a satisfactory or unsatisfactory.

Elective courses are chosen from the following:

- Administrative Law
- Comparative Law
- Conflict of Laws
- Creditors' Rights
- Criminal Procedure
- Damages
- Domestic Relations
- Federal Taxation I and II
- Future Interests
- Insurance
- International Law
- Jurisprudence
- Labor Law
- Land Use Planning
- Legal Problems
- Medicine for Lawyers
- Municipal Corporations
- Practice Court I and II
- Private Corporations
- Real Estate Transactions
- Restitution
- Seminar In Estate Planning
- State and Local Taxation
- Trade Regulations
# Board of Trustees

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J. Otis Young, *Vice Chairman*

Lester L. Roush, *Secretary*

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F. Bringle McIntosh, A.B., S.T.B., D.D., LL.D.,

*President of the University*

*Ex-Officio Member of the Board and all Committees*

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>1949</td>
<td>Charles B. Hoffman</td>
<td>Masonic Temple, Dayton, Ohio</td>
</tr>
<tr>
<td>1956</td>
<td>Walter English, B.S.</td>
<td>Walter English Company, Columbus, Ohio</td>
</tr>
<tr>
<td>1947</td>
<td>George W. Herd, A.B., D.D.</td>
<td>155 East Wheeling St., Lancaster, Ohio</td>
</tr>
<tr>
<td>1958</td>
<td>Lester L. Cecil, L.L.M., LL.D.</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>First Methodist Church, Findlay, Ohio</td>
</tr>
<tr>
<td>1960</td>
<td>Stephen S. Beard, LL.B.</td>
<td>201 Marsh Building, Van Wert, Ohio</td>
</tr>
<tr>
<td>1961</td>
<td>William Judd</td>
<td>7643 Forest Rd., Cincinnati, Ohio</td>
</tr>
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</table>
ELECTED BY THE NORTH EAST OHIO CONFERENCE

Administrative Assistant to the Bishop, Columbus, Ohio

1955 Stewart McHenry, B.A., LL.B. 1965
250 Peoples Bank Bldg., Canton, Ohio

1950 Arthur Hooper, LL.B., LL.D. 1966
Court House, Steubenville, Ohio

First Methodist Church, Massillon, Ohio

1960 Norman J. Brickner, Ph.G. 1963
Cuyahoga Falls, Ohio

Initus

ELECTED BY THE ALUMNI

1957 Harold J. Meredith, LL.B. 1962
The City Loan and Savings Co., Lima, Ohio

1958 George C. Hindall, A.B., M.B.A. 1963
Hindall & Sons, Ada, Ohio

1959 Burke Gardner, Ph.G. 1964
722 S. Main St., Ada, Ohio

D.Ped.
270 East State Street, Columbus, Ohio

1961 Joseph E. Marmon, B.S. Pharmacy 1966
Indianapolis, Indiana

Elected by Trustees at Large

1950 Mrs. Jay P. Taggart, B.Or. 1964
119 W. Montford St., Ada, Ohio

1949 A. Fletcher Plant, B.S.C.E., D.Engr. 1964
The Austin Company, Detroit, Michigan

1954 Ralph W. Booker, B.S.C.E., D.Engr. 1965
Booker & Associates, St. Louis, Missouri
Board of Trustees

1955  WILLIAM O. ELZAY, A.B., M.B.A.  1965
      339 East 58 Street, New York, New York

      12 North Third St., Columbus, Ohio

1954  JOHN M. TITTLE, B.S.  1962
      Stein, Roe & Farnham, Chicago, Illinois

1946  J. V. MELICK, D.B.A.  1964
      Toledo, Ohio

1951  HAROLD J. BOWERS, B.S., M.A., Ph.D.  1962
      State Department of Education, Columbus, Ohio

TRUSTEES EMERITI

1934  JAMES J. PILLOID, B.S.E.E., D.Engr.  1965
      89 Greenacres Ave., Scarsdale, New York

1947  WARREN W. WIANT, D.D.  1967
      129 Glencoe Road, Columbus, Ohio

      700 Bryden Road, Columbus, Ohio
University Administration

UNIVERSITY ADMINISTRATIVE COMMITTEE

FRANK BRINGLE McINTOSH, A.B., S.T.B., D.D., LL.D.
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Administrative Vice President of the University

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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

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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 A. WIRE, B.A., B.D., M.S.
Director of Testing

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

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Otis Games, A.B., A.M., D.Ped.
Counselor of Freshman Men

Harold Cotsamire, B.B.A.
Bursar

William L. Robinson, B.S.Ed.
Acting Dean of Men
Head Resident, Lima Hall

Anna Stotts
Head Resident, Moorman Annex

Mabel S. Wells
Head Resident, Clark Hall

Leora Smith
Head Resident, Women's Dormitory

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Rudolph Henry Raabe, B.S., Phar.D.
Dean Emeritus, College of Pharmacy

Claude Westcoat Pettit, A.B., LL.B., L.L.M., L.L.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 MCLINTOSH, A.B. (DePauw), S.T.B. (Boston), D.D. (De-
Pauw), L.L.D. (Rio Grande), L.L.D. (Ohio Wesleyan), 1949
President of the University with rank of Professor

Ph.D. (Pittsburgh), L.L.D. (Findlay), 1958
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), Fellow A.S.M.E., 1955
Professor of Electrical Engineering

JOHN M. ANDERSON, B.S., M.A. (Peabody), 1962
Instructor in Band

LAWRENCE H. ARCHER, B.S.C.E., B.S.Ed., (Ohio Northern), M.A. (Bow-
lng Green), P.E. (Ohio), 1945
Dean, College of Engineering
Professor of Civil Engineering

ALBERT A. BAILLIS, A.B. (Western Reserve), L.L.B. (Western Reserve),
L.L.M. (New York), 1957
Professor of Law

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

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

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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

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Assistant Professor of English

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

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Instructor in Pharmacy Administration

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Assistant Professor of Pharmacognosy

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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

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Assistant Professor of Mechanical Engineering

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Assistant Professor of Biology

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Instructor in Electrical Engineering

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Instructor in Sociology

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Associate Professor of Physical Education

FRANKLIN D. FARRINGTON, B.S.M.E. (Ohio Northern), 1961
Instructor in Mechanical Engineering

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Assistant to the Dean
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OTIS GAMES, A.B. (Ohio Wesleyan), A.M. (Ohio Wesleyan), D.Ped. (Ohio Northern), 1952
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Assistant Professor of Romance Languages

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Associate Professor of Pharmaceutical Chemistry

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Assistant Professor of Music

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Assistant Professor of Law

EUGENE N. HANSON, A.B. (Luther), A.M., LL.B. (Wisconsin), LLM. (Michigan), 1947
Dean, College of Law
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KATIE LOU HANSON, A.B., A.M. (South Carolina), Ed.D. (Columbia), 1948
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A. LOUISE HASTINGS, A.B., M.A., Ph.D. (Indiana), 1957
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Chairman, Department of History and Political Science
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FLOYD W. HOCH, B.S. in Ed. (Ohio Northern), 1961
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ROY E. SNYDER, B.S., M.S. (West Virginia), 1956
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  Professor of English

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  Chairman, Department of Philosophy and Religion

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  Instructor in Biology

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  Assistant Professor of Law

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  Library Assistant
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Lecturer in Law

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Instructor in Women's Physical Education

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Part-time Instructor in Art

Oliver Schumacher, 1961
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Instructor in Piano
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