The Getty College of Arts and Sciences

Byron L. Hawbecker, Dean

Accredited by
The American Chemical Society
National Association of Schools of Music
The Department of Education of the State of Ohio

Membership in
American Association of Colleges for Teacher Education
American Association for Higher Education
American Historical Association
American Institute of Biological Sciences
American Political Science Association
American Theatre Association
Association for Computing Machinery
College Art Association
Council of Colleges of Arts and Sciences
Mathematical Association of America
Modern Language Association of America
National Association of Industrial Technology
National Association for Sports & Physical Education
Ohio Association of Colleges for Teacher Education
Public Relations Society of America
Speech Communication Association

Departments
Art; Biological Sciences; Chemistry; Communication Arts; Education; English; Foreign Languages; Health, Physical Education and Sports Studies; History, Political Science and Criminal Justice; Mathematics and Computer Science; Music; Philosophy and Religion; Physics; Psychology and Sociology; Technology.

Endowed Chairs
The Eleanor H. and Robert W. Biggs Chair in Chemistry was established in 1992. The 1993-94 recipient is Dr. David W. Kurtz.

The Eleanor H. and Robert W. Biggs Chair in the Arts was established in 1992. The 1993-94 recipient is Prof. Bruce D. Chesser.

The Eleanor H. and Robert W. Biggs Chair in Sciences was established in 1992. The 1993-94 recipient is Prof. Terry D. Keiser.

The Wilfred E. Binkley Chair of History and Political Science, inaugurated in 1971, has been made possible by a grant from the Scaife Foundation of Pittsburgh. The 1993-94 recipient is Dr. Michael B. Loughlin.

The Northern Chair in Education and Professional and Social Sciences, an unfunded chair, was established in 1992. The 1993-94 recipient is Dr. Gayle E. Lauth.

The Mary Reichelderfer Chair for Mathematics and Computer Science was established in 1983 with funds from the estate of Mary K. Werkman. Dr. Khristo N. Boyadzhiev is the 1993-94 recipient.

The Sara A. Ridenaour Chair of Humanities was established in 1983 from funds provided by her daughter. The recipient for 1993-94 is Dr. Eva B. McManus.

The Kernan Robson Chair of Government, inaugurated in 1972, has been made possible by a trust established by the late Kernan Robson. The 1993-94 recipient is Dr. Robert R. Davis, Jr.

Mission Statement
The Getty College of Arts and Sciences is a community of students and faculty committed to academic, moral, and spiritual development. The rich diversity of studies available in the college challenges community members to develop personal goals and to discover means of achieving them.

The educational program of the college provides a coherent framework that equips each student to flourish in a world of rapidly changing conditions. Academic growth will be demonstrated through achieving special proficiency in the student's major field or fields of study. Specific cognitive goals include knowledge of the origins and content of contemporary culture, effective communication based on logical thinking, competence in quantitative reasoning, a rational approach to the physical and biological
world, and sensitivity to artistic expression. This foundation for lifelong learning is designed to equip students to function as free persons in a free society and to support personal commitment to ethical and religious ideals that are vital for humanity.

Admission Standards

Candidates seeking admission to the College of Arts and Sciences are required to meet the general requirements for admission to the University. The College of Arts and Sciences accepts high school graduates and non-graduates who have 16 acceptable units. Twelve of these units are as follows: 4 units in English; 2 units in mathematics; 6 units in history, social studies, languages or natural sciences, or any combination thereof. Candidates are encouraged to take a foreign language while in high school. Acceptable scores on the American College Test or the College Entrance Examination Board tests are expected of all candidates.

High school seniors with superior ability and maturity must apply each quarter they plan to attend for a limited amount of course work for credit on campus during their senior year or during the summer preceding their senior year, if they have the recommendation of their high school principal and the approval of the admissions committee.

The First Year Experience

The College of Arts and Sciences has established a “First Year Experience” program which particularly meets the needs of new students at Ohio Northern University. This First Year Experience program includes the Freshman Seminar course, department orientation courses, and pre-professional orientation courses. Although the specific selection of courses within this group is a function of the student's interests, major field, and career aspirations, each student will meet the general goals of the overall program through a set of common experiences. The general goals of the First Year Experience program are as follows:

1. It is designed to help new students make the transition from high school to college life. In particular, it attempts to integrate new students into the Ohio Northern University campus community.

2. It helps acquaint new students with the facilities, operations, and procedures of the University. Specific attention is given to those matters that directly impact the student's major program and/or career path.

3. It encourages new students to take full advantage of the many opportunities for growth available to them at Ohio Northern University, including participation in cultural, social, and intellectual activities designed to provide for their adjustment to the campus and to enrich their college experience.

The Senior Capstone Experience

All students graduating from the College of Arts and Sciences participate in a “Senior Capstone Experience” which allows them to integrate many concepts from their major course of study into a final project or activity. The exact nature of the capstone experience is dependent upon the specific departmental major, and the requirement may be fulfilled by a variety of senior-level events such as seminars, research projects/papers, recitals, exhibitions, or practicums.

Degree Requirements

Bachelor of Arts

The following are the prescribed general education courses required of all students enrolled in a Bachelor of Arts degree program. This degree is available to students in most of the majors within the College of Arts and Sciences (see “Completing a Major” on page 47). Specific requirements for the Bachelor of Music and the Bachelor of Fine Arts may be found under the departments of music and art, respectively.

Basic Requirements
First Year Experience—Orientation or Freshman Seminar
English 110 and 111
English 204 (Great Works)
Public Speaking 211 or Interpersonal Communication 225
Western Civilization 110 and 111
Philosophy—one four-credit course (see department listing for appropriate courses)
Religion—one four-credit course (see department listing for appropriate courses)
Foreign language: first-year competency (three courses in one modern spoken language).
This requirement may be waived for students whose native language is other than English.

**Distributional Requirements**

a. **Fine Arts**

   two courses (or equivalent totaling eight credit hours) in at least two disciplines: art, music, theatre. One of these must be a classroom course, but six hours of a single, continuing activity course from the following list may fulfill the second four hour course requirement. The maximum number of activity hours allowed to count toward graduation, whether fulfilling the fine arts requirement or free elective credit, is twelve.

   - MUSC 080 Chorus
   - MUSC 081 Chapel Choir
   - MUSC 082 Added Attraction
   - MUSC 083 University Singers
   - MUSC 084 Wind Ensemble
   - MUSC 085 Chamber Chorale
   - MUSC 086 Pep Band
   - MUSC 087 Symphonic Band
   - MUSC 088 Jazz Ensemble
   - MUSC 089 Opera Workshop
   - MUSC 090 Marching Band
   - MUSC 092 Woodwind Ensemble
   - MUSC 094 Brass Ensemble
   - MUSC 095 Percussion Ensemble
   - MUSC 096 Orchestra
   - MUSC 098 String Ensemble
   - MUSC 099 New Music Ensemble
   - COMM 261 Performance Practicum
   - COMM 276 Production Practicum
   - COMM 378 Design Practicum
   - COMM 387 Directing Practicum

b. **Humanities**

   one course (4 credits) not in discipline of primary major: literature or creative writing, foreign language, philosophy, religion, history.

c. **Social Sciences**

   two courses (8 credits) not in discipline of primary major: psychology, sociology, political science, economics.

d. **Mathematics/Natural Sciences**

   three courses (12 credits) which include:
   - one in biological science, one in physical science, and one mathematics course.

   Students seeking teacher certification must take at least one computer science course and one mathematics course.

**Graduation Requirements**

A student's total education program must include the following:

a. use of the computer or substantial exposure to or study of the uses and implications of computer technology as determined by the specific program major;

b. at least four credits which involves substantial exposure to or study of a non-Western or Third-World people, society, or culture;

c. at least three 1-hour physical education activity courses with 6 hours maximum counted toward the degree, except for physical education majors (see course distribution requirement under Physical Education Service Courses on page 47);

d. completion of all major requirements, including the senior capstone experience, as stipulated by the appropriate program faculty.

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**Bachelor of Science**

The following are the prescribed general education courses required of all students enrolled in a Bachelor of Science degree program. A candidate for the Bachelor of Science degree must major in biology, environmental studies, chemistry, biochemistry, physics, mathematics, computer science, health, physical education and sports studies, or technology. Specific requirements for the B.S. in Medical Technology are listed under the department of biological sciences.

**Basic Requirements**

**First Year Experience—Orientation or Freshman Seminar**

- English 110 and 111
- English 204 (Great Works)
- Public Speaking 211 or Interpersonal Communication 225
- Western Civilization 110 and 111
- Philosophy—one four-credit course (see department listing for appropriate courses)
- Religion—one four-credit course (see department listing for appropriate courses)
- Mathematics—three courses (12 credits) at the level of Functions I (120) or above

**Distributional Requirements**

Science component—four courses (16 credits outside the major program of study) from the biological or physical sciences.

- Two courses (8 credits) in social sciences selected from political science, sociology, psychology, economics.

- One course (4 credits) in fine arts - A total of 6 approved activity hours will meet this requirement. (See list and policy under B.A. degree.)
Graduation Requirements
A student's total education program must include the following:

a. use of the computer or substantial exposure to or study of the uses and implications of computer technology as determined by the specific program major;

b. at least four credits which involve substantial exposure to or study of a non-Western or Third-World people, society, or culture;

c. at least three 1-hour physical education activity courses with 6 hours maximum counted toward the degree, except for physical education majors (see course distribution requirement under Physical Education Service Courses on this page);

d. completion of all major requirements, including the senior capstone experience, as stipulated by the appropriate program faculty.

Graduation Requirements: Non-Western, Third World Culture Courses (B.A. and B.S. Degree)

The following courses will meet the general education graduation requirement in Non-Western, Third-World culture study:

AASG 201 Introduction to the Third World (taken two times)
COMM 291 World Theatre History
ENGL 370 African Literature
FREN 329 Civilisation Francaise: Les Cultures Francophones
FREN 418 Francophone Literature of the Twentieth Century
HIST 471 History of the Ottoman Empire
HSPS 222 Contemporary Asia
HSPS 223 Contemporary Africa
HSPS 224 Contemporary Middle East
HSPS 225 Contemporary Latin America
HSPS 226 Human Geography
MUSC 490 Non-Western Music
PLSC 336 Developing Political Systems
RELG 264 Buddhism
RELG 266 Islam
SOC 250 Cultural Anthropology
SOC 351 World Criminal Justice Systems
SPAN 351 Hispanic Cultural Perspectives
SPAN 354 Latin American Civilization
SPAN 357 Latin American Art, Music, and Dance

Additional courses fulfilling this requirement may be approved and will be so announced.

Physical Education Service Courses (All Degrees)

Students will be required to take three physical education courses with at least one course from the fitness area and at least one course from the life skills area. Wellness laboratory is recommended for the third course. See the department of health, physical education and sports studies for definition of the areas. A student is not restricted to the required three credit hours of physical education. A student can receive, in addition to the three required physical education credits, three additional physical education credits that may be applied toward graduation by participation in intercollegiate athletics or by taking other courses within the physical education service program. A maximum of six physical education hours may be counted toward graduation.

In order to receive physical education credit for participation in intercollegiate athletics, a student/athlete must complete the entire season in good standing. An unsatisfactory grade will be assigned if a student/athlete: a) quits the team, b) is dismissed from the team, or c) participates in less than 50 percent of the season. Participation in intercollegiate athletics constitutes one hour of physical education credit per sport to a maximum of three sports. Only one credit of intercollegiate participation in each sport may be counted toward graduation.

Completing a Major

The degree candidate is required to complete in a logical sequence a major of not less than 44 quarter hours. Students may be listed as majoring in general studies during their freshman or sophomore years, but they must select a distinct major by the start of their junior year of study. A faculty advisor assists the student in planning a major by the third quarter of the sophomore year. Candidates for the degree of Bachelor of Arts who expect to teach in the public school are required to satisfy professional education requirements and will have a member of the Center for Teacher Education and Certification for a professional advisor. In some majors, areas of concentration requiring at least 21 quarter hours are provided allowing the student to focus on a specific area within a major.

Students pursuing a dual major program in two departments within the College of Arts and Sciences are required to meet each department’s requirements for the major in that discipline.
The following major fields are offered for the bachelor's degree in the College of Arts and Sciences:

<table>
<thead>
<tr>
<th>Major, Concentration</th>
<th>Degree</th>
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<tbody>
<tr>
<td>Art</td>
<td>BA, BFA</td>
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<tr>
<td>Ceramics</td>
<td>BFA</td>
</tr>
<tr>
<td>Graphic Design</td>
<td>BFA</td>
</tr>
<tr>
<td>Painting</td>
<td>BFA</td>
</tr>
<tr>
<td>Printmaking</td>
<td>BFA</td>
</tr>
<tr>
<td>Sculpture</td>
<td>BFA</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>BS</td>
</tr>
<tr>
<td>Biology</td>
<td>BA, BS</td>
</tr>
<tr>
<td>Chemistry</td>
<td>BA, BS</td>
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<tr>
<td>Communication Arts</td>
<td>BA</td>
</tr>
<tr>
<td>Musical Theatre</td>
<td>BA</td>
</tr>
<tr>
<td>Public Relations</td>
<td>BA</td>
</tr>
<tr>
<td>Speech Communication</td>
<td>BA</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>BA</td>
</tr>
<tr>
<td>Theatre</td>
<td>BA</td>
</tr>
<tr>
<td>Computer Science</td>
<td>BA, BS</td>
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<tr>
<td>Criminal Justice</td>
<td>BA</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>BA</td>
</tr>
<tr>
<td>English/Literature</td>
<td>BA</td>
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<tr>
<td>English/Writing</td>
<td>BA</td>
</tr>
<tr>
<td>Environmental Studies</td>
<td>BS</td>
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<tr>
<td>French</td>
<td>BA</td>
</tr>
<tr>
<td>Health (non-teaching)</td>
<td>BA, BS</td>
</tr>
<tr>
<td>Health Education</td>
<td>BA, BS</td>
</tr>
<tr>
<td>History</td>
<td>BA</td>
</tr>
<tr>
<td>International Studies</td>
<td>BA</td>
</tr>
<tr>
<td>Mathematics</td>
<td>BA, BS</td>
</tr>
<tr>
<td>Medical Technology</td>
<td>BSMT</td>
</tr>
<tr>
<td>Music</td>
<td>BA</td>
</tr>
<tr>
<td>Music Composition</td>
<td>BM</td>
</tr>
<tr>
<td>Music Education</td>
<td>BM</td>
</tr>
<tr>
<td>Music Performance</td>
<td>BM</td>
</tr>
<tr>
<td>Philosophy</td>
<td>BA</td>
</tr>
<tr>
<td>Philosophy and Religion</td>
<td>BA</td>
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<tr>
<td>Physical Education</td>
<td>BA, BS</td>
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<tr>
<td>Physics</td>
<td>BA, BS</td>
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<tr>
<td>Political Science</td>
<td>BA</td>
</tr>
<tr>
<td>Psychology</td>
<td>BA</td>
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<tr>
<td>Religion</td>
<td>BA</td>
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<tr>
<td>Sociology</td>
<td>BA</td>
</tr>
<tr>
<td>Spanish</td>
<td>BA</td>
</tr>
<tr>
<td>Sports Management</td>
<td>BA, BS</td>
</tr>
<tr>
<td>Sports Medicine</td>
<td>BA, BS</td>
</tr>
<tr>
<td>Technology</td>
<td>BA, BS</td>
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</tbody>
</table>

Minors

A formal program of academic minors is available in several of the subject matter areas. Consult the chair of the department in question for specific procedural instructions. Minors require a minimum of 28 quarter hours of approved courses, including some work above the 200 level. Minors are for students who wish to pursue organized study in a discipline without completing a major.

The Bachelor of Music, Bachelor of Fine Arts, Bachelor of Science in Medical Technology Degree Programs

A candidate for the Bachelor of Music degree may major in music composition, education or performance (see p. 124). A candidate for the Bachelor of Fine Arts degree may concentrate in painting, printmaking, sculpture, ceramics or graphic design (see p. 54). A candidate for the Bachelor of Science in Medical Technology degree must complete the clinical year as well as other prescribed requirements (see p. 58). All teacher certification students seeking the Bachelor of Music degree or the Bachelor of Fine Arts degree must take at least one four hour computer science course and one four hour mathematics course.

Teacher Certification

Ohio Northern University is vitally concerned with preparing effective and efficient teachers. Certification programs are offered within the degree requirements in almost every department.

Students preparing to teach are expected to make formal application for admission into the teacher education program during the quarter in which they will complete 90 quarter hours of course work if they have completed all prerequisites. To be accepted, the student must have an overall accumulative point average of at least 2.5 with no grade less than "C." The Center for Teacher Education and Certification establishes policies for admission into the program of teacher education and considers all applications for admission to the program.

Students preparing to teach are assigned advisors in the Center for Teacher Education and Certification to assist them with the scheduling of professional education courses and the completion of clinical/field experiences. The advisor in the student's major department continues to advise the student on the requirements for his/her major.

Students with degrees from other accredited universities may qualify for teacher certification by completing the required professional education courses in the Center for Teacher Education and Certification. The Center permits the completion of degree requirements and/or recommendation for teacher certification only when a student demonstrates qualities indicative of competence in teaching.
Preprofessional Programs

Medical Sciences Programs A Medical Sciences Advisory Committee has been established for the purpose of advising students in the areas of the medical sciences (premedicine, predentistry, preveterinary medicine, etc.). The general objectives of the committee are to counsel students preparing for a career in the medical sciences, to serve as a source of information concerning preprofessional education in the medical sciences, and to serve as a source of recommendations to professional schools in the medical sciences.

A representative of the committee meets with all new premedical students at summer orientations. Committee members serve as academic advisors and are available to provide guidance and information to help students pursue their professional goals during their undergraduate careers.

The first year program usually includes biology, chemistry, English, and mathematics. After the first year, with the exceptions of organic chemistry and physics, the program is a function of the student's choice of departmental major and the professional schools to which he/she plans to apply. For further information, contact Dr. Howard L. Haught, chair, Medical Sciences Advisory Committee.

Medical Technology Many students in medical technology study three years on campus and spend a fourth clinical year at an accredited medical technology school. Forty-five quarter hours are transferred from the medical technology school to Ohio Northern University and applied toward a B.S. in Medical Technology degree. Ohio Northern University is affiliated with Riverside Hospital in Toledo and the Cooperative Medical Technology Program of Akron.

For additional information see department of biological sciences program descriptions in this catalog. For detailed curriculum information contact the medical technology advisor, department of biological sciences.

Pretheology A faculty member in the department of philosophy and religion serves as advisor to the pretheological student in planning a preprofessional program. The recommendations of the American Association of Theological Schools are followed in counseling the student. A major in the department of philosophy and religion or in another appropriate department may be selected.

Prelaw Students in the prelaw program select a major and complete the necessary requirements as do other students. The program is open to all students enrolled in any academic department of the Colleges of Arts and Sciences, Engineering, Pharmacy, or Business Administration. For additional information, see page 33.

General Regulations

1. A student usually may not register for more than 19 hours of academic work unless he/she achieved a grade point average of 3.00 or better in the preceding quarter, in which case the dean may grant permission for extra hours. See page 18 for overload charges beyond 19 credit hours. A normal program consists of 12 to 19 scheduled hours including physical education.

2. All new students in the College of Arts and Sciences are required to take freshman orientation or freshman seminar in the fall quarter.

3. A student indicates a choice of major field by filling out a declaration of major form available in the office of the department chair or dean.

4. No course for which a student has received a "D" is acceptable toward a major, minor, or area of concentration.

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

6. With the permission of the instructor and the department chair, any course prerequisite may be waived.

7. Except where noted, credit hours earned in repeated courses may be counted only one time among the total hours required for graduation.

8. Writing I should be taken by all freshmen during their first quarter on campus. Both courses in writing should be completed by the end of the freshman year.

S/U Grade Option

Students in the College of Arts and Sciences are given the opportunity to register for one course per quarter on an S/U (Satisfactory/Unsatisfactory) option basis, with the following stipulations:

1. The student must have sophomore, junior, senior or postgraduate standing.

2. The requested course cannot count toward fulfillment of major, minor, concentration, or option requirements.

3. The requested course cannot be a 100- level general education course.

4. The requested course cannot be a cognate.

5. The grade of "S" is to be equated with A, B,
C. The grade of "U" is equated with D or F.
6. Students cannot change their minds about the grading system after the second week of class.

Classification of Students

For purpose of classification the minimum requirement for sophomore standing is 45 quarter hours of academic work; for junior standing, 90 quarter hours; for senior standing, 135 quarter hours.

Academic Standing

A grade point average of 2.00 is required for graduation. If a student's accumulative grade point average falls below 2.00, the student is placed on academic probation. The student can return to good academic standing by raising his/her accumulative grade point average to 2.00 or above.

If the accumulative grade point average of a freshman falls below 1.60, that student cannot participate in competitive activities of individuals, teams, or other groups officially designated as representing the University. A sophomore must maintain at least a 1.80 accumulative grade point average to participate in the aforementioned activities. Juniors and seniors who are on academic probation are not eligible to participate in these activities.

Any student on probation whose quarter grade point average for the following quarter is below a 2.00 will have his/her record reviewed by the Committee on Academic Qualifications of the college and may be recommended to the dean for academic actions which may include suspension or dismissal.

If action is taken to suspend a student, the suspension will be for a definite period of time, after which the student may apply for readmission. If readmission is granted, the Committee on Academic Qualifications may establish certain conditions of academic performance for the student to remain enrolled in the College of Arts and Sciences. Continued poor performance by a readmitted student will lead to dismissal.

If action is taken to dismiss a student, it is to be regarded as a terminal action and the student is not eligible to apply for readmission to the College of Arts and Sciences at any time thereafter.

Graduation

To graduate with a Bachelor of Arts, a Bachelor of Fine Arts or a Bachelor of Science degree, a student is required to complete a minimum of 182 quarter hours which includes the appropriate general education courses, complete an approved major, and have an accumulative point average of at least 2.00.

The minimum residency requirement for all students is the last three quarters and the completion of at least 45 quarter hours with at least 90 quality points elected mostly from 300- and 400-level courses.

To graduate with a Bachelor of Science in Medical Technology the student must complete the three-year preclinical program of 138 quarter hours and a one-year clinical program in an approved program of 45 quarter hours for a total of 183 quarter hours.

To graduate with a Bachelor of Music degree in music education, performance or composition, the student is required to complete a minimum of 182 quarter hours which includes the appropriate general education courses, complete an approved major, and have an accumulative point average of 2.00. The music education major must also complete all course work and observation hours required by the state of Ohio for teacher certification.
COLLEGE OF ARTS AND SCIENCES COURSES

Subject - General Arts and Sciences (AASG)

001 - MEDICAL SCIENCES ORIENTATION
0.00 Credit(s)
Familiarity with general requirements and admissions standards for entry into colleges of medicine, dentistry, veterinary medicine, etc. Open to students interested in preparing for a career in these areas. Graded S/U.

002 - PRELAW ORIENTATION
0.00 Credit(s)
Familiarity with general requirements and admissions standards for entry into law school and with opportunities in the legal profession. Graded S/U.

010 - STUDY SKILLS
1.00 Credit(s)
To increase study efficiency by emphasizing improvement in motivation, concentration and memory. Attention is also given to selected study skills including time-management, listening, note taking, reading comprehension and testing. In addition to the weekly class meeting, this course includes one weekly study-skills lab. CREDIT EARNED IN THIS COURSE DOES NOT SATISFY GRADUATION REQUIREMENTS FOR ANY PROGRAM OFFERED AT THE UNIVERSITY. Open to freshmen and sophomores only.

011 - COLLEGE READING SKILLS
2.00 Credit(s)
To increase student reading efficiency of college textbooks by emphasizing improvement in student reading comprehension, reading speed and vocabulary. In addition to the weekly class meeting, this course includes two weekly reading labs. CREDIT EARNED IN THIS COURSE DOES NOT SATISFY GRADUATION REQUIREMENTS FOR ANY PROGRAM OFFERED AT THE UNIVERSITY.

012 - STRESS MANAGEMENT AND EFFECTIVE LIVING
1.00 Credit(s)
To provide students an opportunity to learn and adopt stress management skills that will enable them to lead more productive and satisfying lives. In addition to the weekly class meeting, this course includes one weekly individualized stress-management lab. CREDIT EARNED IN THIS COURSE DOES NOT SATISFY GRADUATION REQUIREMENTS FOR ANY PROGRAM OFFERED AT THE UNIVERSITY.

100 - FRESHMAN SEMINAR
1.00 Credit(s)
To acclimate freshmen to academic, personal, social and cultural opportunities at the university. To encourage positive life long learning skills for students. To help them cope successfully with the demands of the first year of college through the use of challenges and opportunities in and out of the classroom. Course graded S/U.

121 - CAREER PLANNING
1.00 Credit(s)
Principles, methods, and practice in career planning with emphasis on self analysis, career information, exploration of careers, and career opportunities. In addition to the weekly class meeting, this course includes one weekly individualized career development lab. This course is designed for freshmen or sophomores who are uncertain about their college major or their career plans.

190 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)

201 - INTRODUCTION TO THE THIRD WORLD
2.00 Credit(s)
A series of films, speakers, panels, readings, and discussions centered around a country, area, or theme related to the Third World. This course must be taken twice to meet the general education requirement in non-Western culture.

290 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)

297 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)

390 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)

490 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)

497 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
311 - AIR FORCE MANAGEMENT 1
4.00 Credit(s)
Integrated management course emphasizing individual as leader in the Air Force. Human behavior, individual and in groups, historical development of management thought, discussion of classical leadership theory, oral and written communication, military writing, and briefing formats. Leadership laboratory activities. Prerequisite: Departmental approval.

312 - AIR FORCE MANAGEMENT 2
5.00 Credit(s)
Continuation of 311. Air Force leadership, planning, organizing, coordinating, directing and controlling functions of management with emphasis on Air Force application, concept of command and staff, junior officer as administrative leader, Air Force personnel system, management of change, managerial strategy in changing environment. Leadership laboratory activities. Prerequisite: Departmental approval.

390 - SPECIAL TOPICS IN AEROSPACE STUDIES
1.00 to 6.00 Credit(s)
Topics include, but are not limited to the study of suggested military subjects: The Profession of Arms, Leadership Principles and Styles, Leadership Assessment Program, and Participation in Leadership Labs and Field Training Exercises. Credit may be granted for Air Force ROTC Summer Field Training and the Professional Development Program. No military obligation. Departmental permission required.

411 - AMERICAN NATIONAL SECURITY 1
4.00 Credit(s)
Role of the President, the Congress and the National Security Council in national security policy making; American defense strategy; alliances; regional security; arms control. Leadership Laboratory activities. Prerequisite: Departmental approval.

412 - AMERICAN NATIONAL SECURITY 2
5.00 Credit(s)
Air Force officer as part of national security forces; military law; laws of armed conflict; the military profession; transition to military life; relations with civilian community. Leadership Laboratory activities. Prerequisite: Departmental approval.
DEPARTMENT OF ARMY ROTC

Subject - Army ROTC (ARMY)

A TOTAL OF SIX CREDITS EARNED IN ARMY ROTC MAY COUNT TOWARD THE 182 QUARTER HOURS NEEDED FOR GRADUATION IN THE COLLEGE OF ARTS AND SCIENCES.

101 - THE ROTC AND ROLE OF THE U.S. ARMY
3.00 Credit(s)
Background, programs, benefits and objectives of Army ROTC. Organization and functions of national defense establishment with emphasis on the role of the U.S. Army. Extensive discussion of the role and responsibility of the military officer. Presentation of detailed information concerning career opportunities as an Army officer. No military obligation or prerequisites. Freshmen and sophomores only.

102 - LEADERSHIP/MILITARY SKILLS
3.00 Credit(s)
Leadership focuses on interpersonal skills, professional ethics and officerhip. Military skills include the understanding and application of basic rappelling techniques. No military obligation or prerequisite. Freshmen and sophomores only. (Formerly 107 Professional Military Ethics).

107 - STUDIES IN MILITARY SCIENCE
1.00 Credit(s)
Detailed study of selected military subjects. Offered as independent study. No military obligation. Departmental permission required. (Formerly 211).

201 - SURVIVAL
3.00 Credit(s)
Study and application of skills needed in basic human survival situations. Topics include land navigation, survival skills, and first aid. No military obligation or prerequisite. Freshmen and sophomores only.

202 - MILITARY TACTICS
3.00 Credit(s)
Introductory course. Topics include the Principles of War, terrain analysis, fundamentals of offensive and defensive operations, and Airland Battle Doctrine. No military obligation or prerequisite. Freshmen and sophomores only. (Formerly 204).

301 - PROFESSIONALISM/LEADERSHIP
4.00 Credit(s)
Professionalism and leadership required of the U.S. Army officer; application of leadership principles and styles through case studies and role-playing exercises with emphasis on military situations. Participation in leadership labs, physical training program and field training exercises required. Prerequisite: Departmental permission and completion of one of the following: ROTC basic course at BGUS; ROTC Basic Camp at Fort Knox, KY; prior Active Duty service; Army Reserve/ANG basic training.

302 - SMALL UNIT OPERATIONS
5.00 Credit(s)
Organization and employment of basic military teams. Squad and platoon level tactical operations. Progressive leadership development through application of tactical principles. Participation in leadership labs, physical training program and field training exercises required. Prerequisite: Departmental permission.

390 - ARMY ROTC SPECIAL TOPICS IN MILITARY SCIENCE
1.00 to 6.00 Credit(s)
Topics include but are not limited to: Study of selected military subjects; the profession of arms, leadership principles and styles, leadership assessment program, and participation in leadership labs and field training exercises. Credit may be granted for completion of Army ROTC Basic Camp at Ft. Knox, Kentucky. No military obligation. Departmental permission required.

401 - UNIT MANAGEMENT AND OFFICER DEVELOPMENT
4.00 Credit(s)
Concepts and fundamentals of Army administration, supply and material readiness. Professional officership techniques and military ethics. Management at the small unit level. Organizing, planning and participating in field training exercises. Prerequisite: Departmental permission.

402 - UNIT MANAGEMENT, MILITARY WRITING AND CORRESPONDENCE
5.00 Credit(s)
Organization and concepts of the U.S. Army judicial system including court martial, nonjudicial and nonpunitive actions. Development of military writing techniques, preparation of staff papers and staff actions. Discussions of movement of goods, and administrative details pertinent to newly commissioned lieutenants. Development and participation in field training exercises. Prerequisite: Departmental permission.
DEPARTMENT OF ART

Professors DeVore, West; Associate Professor Chesser (Chair); Assistant Professor Greauv

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

The artist should be educated comprehensively through a program combining professional training and broad study in the liberal arts. It is on this premise that the student majoring in art: (1) receives as broad an understanding of art as possible; (2) becomes acquainted with historical and cultural knowledge of the past and present; (3) develops a working proficiency through mastery of the tools and skills of his profession; (4) develops personal modes of expression in the media of the visual arts; and (5) acquires an awareness of any competency in other academic disciplines.

A student seeking a Bachelor of Arts degree with a major in art must complete the following courses: 150, 160, 170, 210, 222, 250, 251, 255, 265, 270, 280, 310, 320, 330, 355, 360 plus 12 art elective hours for a total of 76 hours.

A candidate for the Bachelor of Fine Arts degree must complete the following general requirements: English 110, 111; Great Works 204; Public Speaking 211 or Interpersonal Communication 225; Western Civilization 110, 111; Religion, one course; Philosophy, one course; Foreign Language, eight hours; Social Science elective, one course selected from psychology, sociology, economics, political science; Math and Natural Sciences, two courses from biological sciences, mathematics, or physical science for a total of eight hours; Theatre 105; Music 100; Orientation or Freshman Seminar, one hour.

Graduation Requirements: A student's total educational program must include the following: (1) Use of the computer or substantial exposure to or study of the uses and implications of computer technology; (2) At least one course which involves substantial exposure to or study of a non-Western or third-world people, society, or culture; (3) Three one-hour physical education activity courses.

A candidate for the Bachelor of Fine Arts degree must also complete 96 hours for the major including 150, 160, 170, 210, 222, 250, 251, 255, 265, 270, 280, 310, 320, 330, 355 and 360. Students concentrating in ceramics, painting, printmaking, or sculpture must complete a minimum of 24 hours in the area of concentration. Students concentrating in graphic design must complete four hours of 222, four hours of 223, 16 hours of 471 and TECH 240 and TECH 341.

A student may obtain a minor in art by completing 150, 160, 170, one three-dimensional course, and 12 hours of art electives. Students are urged to confer with a faculty advisor in order to make an appropriate selection of course work.

Professional education requirements are listed by the Center for Teacher Education and Certification.

A public exhibition of the student's studio work (one hour of 489) is required for graduation with a major in art for both the Bachelor of Arts and the Bachelor of Fine Arts degree.

Portfolios are required for all applications for scholarships as well as for all applications for admission with advanced standing. While portfolios are not required of entering freshmen, their submission tends to expedite admission.

Subject - Art (ART)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning program of courses, university catalog, and library. Required of all majors in the department.

100 - ART
4.00 Credit(s)
Analysis of the visual arts through selected works from the past and present. Illustrated lecture.

150 - STUDIO FOUNDATIONS 1
4.00 Credit(s)
Methods and media of drawing, elements and principles of design including color study.

160 - STUDIO FOUNDATIONS 2
4.00 Credit(s)
Drawing 3-dimensional forms in space, color use in drawings, elements and principles of 3-design in variety of materials. Prerequisite: ART 150.

170 - DRAWING WORKSHOP
4.00 Credit(s)
Complex problems, thematic development, figure drawing, special papers and methods. May repeat to 8 credits.

190 - SPECIAL TOPICS IN ART
1.00 to 4.00 Credit(s)
210 - FIGURE DRAWING
4.00 Credit(s)
Drawing and anatomical study of the human figure. May repeat for credit to total of 12 hours.

222 - GRAPHIC DESIGN 1
4.00 Credit(s)
Basic letter forms, emphasis on proportion, theory, rendering technique and applications of lettering in commercial art.

223 - GRAPHIC DESIGN 2
4.00 Credit(s)
A continuation of ART 222, in addition to problem solving associated with the making of advertising for print and other media, advertising and marketing skills, copywriting and editing, and other allied communication skills. May repeat for a total of eight hours' credit.

250 - PAINTING 1
4.00 Credit(s)
An introduction to techniques and modes of painting. Emphasis on theory and use of color in oil or acrylic.

251 - PAINTING 2
4.00 Credit(s)
Techniques and modes of painting in oil. May repeat for credit to a total of 12 hours. Prerequisite: ART 250.

255 - CERAMICS 1
4.00 Credit(s)
Methods and techniques of forming clay products with emphasis on hand construction. Introduction to work on the potters wheel. Decorating, glazing and firing of ceramic ware.

265 - SCULPTURE 1
4.00 Credit(s)
An introduction to the design and rendering of sculptural form in a variety of media and techniques. Emphasis on organizational problems of form and space.

290 - SPECIAL TOPICS IN ART
1.00 to 4.00 Credit(s)

310 - ART HISTORY 1
4.00 Credit(s)
Emphasis on prehistoric to 14th century art, European and Near Eastern forms, developments and styles. Non-European styles explored as directed comparative studies. Prerequisite: Sophomore status or permission of instructor.

320 - ART HISTORY 2
4.00 Credit(s)
The development of European painting, sculpture and architecture from the 15th through the first half of the 19th century. Illustrated lectures. Prerequisite: Sophomore status or permission of instructor.

330 - ART HISTORY 3
4.00 Credit(s)
The formation and development of major artistic movements in Europe and the United States from 1860 to the present. Prerequisite: Sophomore status or permission of instructor.

350 - CERAMICS 2
4.00 Credit(s)
Methods and techniques of forming, decorating, glazing and firing clay bodies. Emphasis on wheel throwing. May repeat for a total of 8 hours credit. Prerequisite: ART 255.

355 - WATERCOLOR
4.00 Credit(s)
Techniques and modes of painting in aqueous media. May repeat for credit to a total of 8 hours. Prerequisites: ART 150 and 160 or permission of the department.

360 - SCULPTURE 2
4.00 Credit(s)
The design and construction of more complex sculptures in a variety of media and techniques. May repeat to total of eight hours. Prerequisite: ART 265.

365 - SCULPTURE 3
4.00 Credit(s)
Use of metals, oxyacetylene welding of steel, lost wax casting of bronze. May repeat for a total of 12 hours.

375 - PRINTMAKING 1
4.00 Credit(s)
Methods and techniques of relief and intaglio processes. Includes woodcut, linocut, etching, engraving, drypoint, aquatint, hard and soft grounds. Prerequisites: ART 150, 160, 170 and permission of instructor.
385 - PRINTMAKING 2
4.00 Credit(s)
Serigraphy and Lithography introduced as planographic processes in a short, intensive, workshop environment. Serigraphy, its fundamentals and basic techniques, will be introduced and demonstrated first; then, stone or metal plate lithography fundamentals and techniques. Students are then required to master one of these processes, and to demonstrate a working understanding of the other through a body of produced work. Prerequisites: ART 150, 160, 170 and permission of the instructor.

390 - SPECIAL TOPICS IN ART
1.00 to 4.00 Credit(s)

410 - ADVANCED CERAMICS
4.00 Credit(s)
Directed study. May repeat to total credit of 12 hours. Prerequisite: 8 hours of ART 350.

415 - ADVANCED PRINTMAKING
4.00 Credit(s)
Directed study. May repeat to total credit of 12 hours. Prerequisite: 8 hours of ART 375 and/or 385.

420 - ADVANCED PAINTING
4.00 Credit(s)
Directed study. May repeat to total credit of 12 hours. Prerequisite: 8 hours of ART 250 and 251.

471 - INTERNSHIP
8.00 to 16.00 Credit(s)
Supervised field experience in an approved commercial art studio, agency, design department, museum, gallery or arts organization. Application for this course must be made through the student’s advisor to the department chairman not later than one full quarter in advance of enrollment. Prerequisites: Junior or senior rank; ART 150, 160, and 222; and permission of the department.

489 - SENIORThESIS
1.00 Credit(s)
Required of all art majors. Preparation for and evaluation of the comprehensive examination and exhibit. Arrangements for this course must be made one quarter in advance with the student’s advisor and the department chairman.

490 - SPECIAL TOPICS IN ART
1.00 to 4.00 Credit(s)

494 - SEMINAR IN ART
1.00 to 4.00 Credit(s)

497 - INDEPENDENT STUDY IN ART
1.00 to 4.00 Credit(s)

DEPARTMENT OF BIOLOGICAL SCIENCES

Professors Hoagstrom, Keiser (Chair), Moore, Nelson; Associate Professors Anderson, Warwick, Young; Assistant Professor Zafirova; Instructor Haines; Assistant Instructor Magaw; Adjunct Faculty Connor, Crawford, Lange, Meyer, Novak.

Students majoring in the biological sciences or in environmental studies will be exposed to a wide range of academic disciplines within biology and environmental studies, including current instrumentation and research techniques and written and oral scientific communication methods. Biology 121 is a principles course with a major emphasis on the study of the cell, genetics, evolution, and ecology. It provides generalizations by which advanced courses in biology can be related to one another and is therefore a prerequisite to all other courses in the curriculum. Students desiring further knowledge of general biology may take Biology 122 which surveys the animal kingdom, and Biology 123 which explores general botany and the fungi. These courses also provide a firm foundation for advanced work in biology and the related applied sciences.

The Bachelor of Arts and Bachelor of Science degrees are available to biology majors with the opportunity to specialize in premedical sciences (including predentistry, premedicine, and preveterinary medicine), health technology, environmental testing, field biology, and secondary education. Core requirements for both degrees are Biology 121, 122, 123, 195; 494 or 295, 395 and 495; one advanced systematic survey course such as Biology 204, Biology 223, or a student may fulfill the systematic survey requirement by taking two of the following vertebrate special topics courses (Ichthyology, Herpetology, Ornithology and Mammalogy) from Biology 490; one advanced organismic course such as Biology 231, 301, 302, 310, or 331; one course with considerable cellular/molecular content such as Biology 217, 351 or Biology 210; one field biology course such as Biology 213, 251, 271, 371. A minimum of 16 biology elective hours is chosen from among the following courses excluding those which have been taken as required core courses above: Biology 125, 204, 210, 213, 217, 223, 231, 232, 233, 251, 265, 271, 290, 297, 301, 302, 303, 308, 310, 311, 321, 331, 332, 333, 343, 351, 371, 372, 383, 423, 441, 451, 481, 490, 497. The independent study courses 297 and 497 and Internship
481 may count for only seven hours of the 16 biology elective hours.

Virology from the College of Pharmacy is accepted as an elective. Credit cannot be granted for both 231 and 331 or 232 and 332. Both degrees require a minimum of 47 biology hours. Departmental advisors will assist students in selecting relevant electives.

Both the B.A. and the B.S. degrees require a minimum of 25 hours of science cognates. Cognate requirements for the B.A. degree include three courses in chemistry, two other science courses, two courses in mathematics, and one course in physics, computer science or an additional mathematics course. The cognate requirements for the B.S. degree include three courses in chemistry, two other science courses, two courses in mathematics, one course in computer science, and an additional course in mathematics or computer science. For both degrees, courses in physics are strongly recommended. Specific science courses taught in the College of Engineering are acceptable cognates. Kinesiology 223 offered by the department of health, physical education, and sports studies may count with permission of the biological sciences faculty.

In addition to the major and cognate requirements, the B.S. degree requires 20 hours of science which are taken in the division of mathematical and natural sciences in the College of Arts and Sciences. These hours may also be satisfied by taking courses in the Colleges of Engineering and Pharmacy, but are subject to the approval of the biological sciences faculty.

The department of biological sciences also offers a major in environmental studies. Students studying in this area are pursuing careers with industrial firms and governmental agencies. Core requirements include Biology 121, 122, 123, 125, 195, 213, 223, 251, 280, 305, 311, 481, and two Biology 490 courses chosen from the following: Entomology, Ichthyology, Mammalogy, or Radiation Biology. Additional courses offered in the department would include the OSHA Safety course and Environmental Law. Cognate courses must include one year of chemistry including Environmental Chemistry 115; two courses in physics, four courses in mathematics and computer science; two courses in psychology; four courses in political science; two courses in the College of Business Administration including Management 330; and four courses in the College of Engineering including Transportation I (351), Environmental Science (321), Solid/Hazardous Wastes (323) and Surveying (203). A course in environmental ethics is also highly recommended to fulfill the philosophy requirement of the College of Arts and Sciences. Additional courses in chemistry are also recommended for those wishing to pursue graduate studies. The department will make every effort to tailor the program to meet individual goals and needs of the student.

Beginning with the 1993-94 school year, the secondary education student majoring in biology is required to take the following biology courses: Biology 121, 122, 123, 204, 210, 217 or 351, 223, 251, 231 or 301 or 302 or 331, 311, 295, 395, 495 and at least 5 quarter hours of biology electives, to complete 48 quarter hours of biology. Science cognates for secondary education students must include: Chemistry 171, 172 and 173, Physics 100 or 211 or 231, Physics 250 and Biology 280. Chemistry, physics and earth science courses must sum to 24 quarter hours. The secondary education student must take additional electives in biology, chemistry, physics and/or earth science to complete a total of 75 quarter hours of science. Mathematics cognates for secondary education students must include: Mathematics 120 and 122 or 160 or 163 or 154. The secondary education student must also complete the education component of the program, including required field experiences and student teaching.

A student may minor in biology, biomedical sciences or environmental studies. For all three minors, a minimum of 30 quarter hours in biology is required. For the biology minor, the required courses are the same as for a major in biology with the exception that 195, 295, 395, 494 and 495 are not required. An additional two or three hours of biology electives are required to complete the requirement of 30 quarter hours of biology.

For the biomedical sciences minor, the required courses are Biology 121, 122, 124, 231 or 331 and 334, 232 or 322 and 335, 233 or 333 and 336. Electives must be chosen from Biology 210, 217, 301, 302, 303, 311, 321, 343, 351, and 490 (Parasitology).

For the environmental studies minor, the required courses are Biology 121, 122, 123, 125, 223, 251, and 311. Electives must be chosen from Biology 213, 265, 271, 383, 423 and 490.

For any minor, a student must take at least 12 hours of biology in addition to the biology required for other majors and minors.

Required cognate courses for all minors include 12 quarter hours in the division of mathematics and natural sciences, not including biology.

The Ohio Northern University Nature Center, a 70-acre farm in Tuscarawas County, Ohio, serves as a biology field station. The facility is located near Ragersville, and it includes a century-old house with eight rooms and a
laboratory area. The hills, valleys, woods, fields, stream, and pond provide an excellent opportunity for teaching, study, and research.

The department of biological sciences offers a medical technology program leading to a Bachelor of Science in Medical Technology. The affiliate hospitals are Riverside Hospital in Toledo, Ohio, and the Cooperative Medical Technology Association of Akron, Ohio. The candidate for this degree must complete the following general education requirements: First Year Experience; English 110, 111, 204; Communication Arts 211 or 225; two mathematics courses at the level of Math 120 or above; one computer science course; one religion course; Western Civilization 110 and Western Civilization 111 or a non-Western/Third World course; one fine arts course; Psychology 100; and three one-hour physical education courses. Departmental requirements include Biology 121, 122, 124, 210, 212, 223, 301, 311, 321, 331, 343, 394 or 295 and 495 plus 8 hours of advanced biology electives. Courses in other areas of natural science include Chemistry 171, 172, 173, 231, 232, 233 and Biochemistry 342 offered in the College of Pharmacy, and a basic electronics course, Physics 241. The B.S. in Medical Technology degree is awarded after the successful completion of the clinical year from an accredited school of medical technology. The medical technology student may choose to graduate with a major in biology, and then after graduation complete the clinical year. The student interested in this option should consult the medical technology advisor. The courses taken during the clinical year at Riverside Hospital are listed below and numbered from 460 to 477.

The department of biological sciences has an internship program in which it has formed working relationships with a number of organizations and institutions. For seniors, the one quarter internship provides an off-campus practical experience in an area of biology while earning 16 hours of credit. Examples of possible internships include toxic waste control, environmental testing, zoo animal care and management, wildlife and fisheries management, laboratory research, cardiology, cardiopulmonary technology, biomedical computer, hospital and technical health programs. Before embarking on an internship, students must complete at least three years of courses in biology and related areas. The internship must be approved by the faculty of the department.

Subject - Biology (BIOL)

103 - LIFE AND EARTH SCIENCE FOR ELEMENTARY EDUCATION MAJORS
4.00 Credit(s)
Consideration of the life sciences, including the following topics: cell biology, genetics, animal anatomy and physiology (primarily human), plant anatomy and physiology, evolution and ecology. Aspects of earth science as they affect and have affected life on earth including: weather, climate, glaciers, extraterrestrial impacts and continental drift. The roles of energy, material and information are emphasized. For Elementary Education majors only. Prerequisite: CHEM 102.

121 - GENERAL BIOLOGY
4.00 Credit(s)
Biological principles of plant and animal life with emphasis on cell biology, genetics and major concepts in evolution and ecology. Laboratory material is made available and discussed when appropriate. (Formerly BIOL 100).

122 - INTRODUCTION TO ZOOLOGY
4.00 Credit(s)
A basic introduction to zoology including the classification of major animal groups. The structure of animals is approached from a comparative systems viewpoint. (Formerly BIOL 112). Prerequisite: BIOL 121.

123 - GENERAL BOTANY
4.00 Credit(s)
A survey of microbes, fungi and plants emphasizing classification and evolutionary relationships. The life histories, anatomy and physiology of fungi and plants will also be closely examined. (Formerly BIOL 113). Prerequisite: BIOL 121.

124 - INTRODUCTION TO HUMAN ANATOMY AND HISTOLOGY
4.00 Credit(s)
Basic introduction to the gross anatomy and histology of the human body systems. Corequisite: BIOL 126. Prerequisite: BIOL 122.

125 - ENVIRONMENTS OF MAN
4.00 Credit(s)
The interaction of man and his surroundings with an emphasis on the problems arising from increasing human population, pollution, and resource use. (Formerly BIOL 244).

195 - ORIENTATION (1+0)
1.00 Credit(s)
Presentations and discussions relating to adjustment and requirements of academic life within the University, College and the Department of Biological Sciences.
204 - SYSTEMATIC PLANT SURVEY (2+4)
4.00 Credit(s)
Plant and algal relationships concentrating on phylogeny and classification. The morphology, development and life cycles of selected taxa will be examined. Prerequisite: BIOL 123.

210 - INTRODUCTORY GENETICS
4.00 Credit(s)
A survey of Mendelian, molecular and population genetics. Bacteriophages, bacteria, Drosophila, corn and humans will be studied for their historical and technological significance. Molecular information transfer and the regulation of gene expression will be analyzed in some depth. The laboratory focuses on an experimental analysis of fundamental genetic principles. Prerequisites: BIOL 121, 122 and 123; one year of chemistry.

213 - NATURAL HISTORY (1+6)
4.00 Credit(s)
A recognition, identification, and understanding of local biotic communities and their inhabitants is stressed. Field study is emphasized. Prerequisite: BIOL 122 or permission of the instructor.

217 - INTRODUCTION TO MOLECULAR BIOLOGY (3+3)
4.00 Credit(s)
The study of the basic molecular processes of DNA, RNA, and protein synthesis. The regulation mechanisms used by viruses will be analyzed. The laboratory will emphasize gel electrophoresis techniques. Previous experience in organic chemistry is recommended. Prerequisite: one year of biology.

223 - INVERTEBRATE ZOOLOGY (3+3)
4.00 Credit(s)
Invertebrate relationships including morphology, physiology, life cycles and taxonomy. Prerequisite: BIOL 122.

231 - ANATOMY AND PHYSIOLOGY 1 (3+3)
4.00 Credit(s)
Basic principles of human structure and function, including relevant aspects of exercise physiology. Includes cell physiology, metabolism, histology, skin, bone and neural anatomy and physiology. Prerequisite: BIOL 122; with BIOL 124 recommended.

232 - ANATOMY AND PHYSIOLOGY 2 (3+3)
4.00 Credit(s)
Continuation of 231. Topics covered include blood, immunology, renal system and digestive system, endocrinology and reproductive system. Prerequisite: BIOL 231.

233 - EXERCISE PHYSIOLOGY (3+3)
4.00 Credit(s)
The physiological basis of physical education and athletics. Course emphasis is on exercise physiology. Topics covered include thermal regulation, muscle physiology, respiratory physiology, cardiovascular physiology and special topics in exercise physiology. Laboratory covers techniques for evaluating physical conditioning as related to lecture topics. Prerequisites: BIOL 232 or 333

240 - OSHA 40-HOUR SAFETY TRAINING
3.00 Credit(s)
Course provides the practical knowledge concerning response operations for the remediation incidents involving hazardous materials. Uncontrolled (remediation) site functions, methods of operation and safety in cleaning-up hazardous substances dumped, spilled or investigations at abandoned hazardous waste sites are emphasized. Course provided by arrangement with the University of Findlay at Findlay.

245 - OSHA SAFETY TRAINING REFRESHER
1.00 Credit(s)
This eight hour workshop is designed to comply with requirements regarding annual follow-up training for hazardous waste site workers who have previously completed BIOL 240 (OSHA Safety Training). The course should be scheduled only in consultation with the Environmental Studies advisor in the department. The course is taught at the University of Findlay. May be repeated 3 times for credit. Prerequisite: BIOL 240.

251 - PRINCIPLES OF ECOLOGY
4.00 Credit(s)
Consideration of the interaction of organisms with their environment at the levels of the individual, population, community and ecosystem. The laboratory consists of collection of data in the field, and analysis and interpretation of that data. Prerequisites: BIOL 122 and 123.

263 - BIOGEOGRAPHY
5.00 Credit(s)
The current and historic distribution of plants and animals. Consideration of continental drift, glaciation, meteorology, climatology, ecology and evolutionary history and their effect on the current distribution. Prerequisites: BIOL 121, 122, 123 or permission of instructor.
271 - INTRODUCTION TO MARINE BIOLOGY
4.00 Credit(s)
An introductory overview of the various organisms and their habitats. Particular emphasis is placed on southeastern and Gulf coastal and offshore environments. A two-week field trip to a selected marine environment is required. Permission of instructor and prerequisite required. Prerequisite: BIOL 122.

280 - GEOLOGY
4.00 Credit(s)
Physical geology and paleogeology, including chemical properties of minerals and rocks, geologic processes, and earth materials, and how these relate to the formation and preservation of plant and animal fossils. Fossils from the major geologic eras will be surveyed and reviewed in an evolutionary and ecological context. Prerequisites: BIOL 121, 122 or 123, or permission of instructor.

290 - SPECIAL TOPICS IN BIOLOGICAL SCIENCES
1.00 to 4.00 Credit(s)
Grading system at the discretion of the instructor.

295 - BIOLOGICAL LITERATURE RESEARCH
1.00 Credit(s)
Selection of a research project for the student's senior thesis, planning the approach to the project and submission of a formal research proposal for department approval. The research proposal will require reading and critical analysis of portions of classical and current journal articles. Attendance of all departmental and thesis seminars required. Prerequisites: BIOL 121, 122 and 123.

301 - DEVELOPMENTAL ANATOMY (2+4)
4.00 Credit(s)
A study of the human embryonic and fetal development supplemented by laboratory studies of fish, chick, pig, and mouse embryonic development. Prerequisite: BIOL 122 or its equivalent.

302 - HUMAN ANATOMY (2+4)
4.00 Credit(s)
(Formerly 300). A study of the gross anatomy of the human body and body systems. Prerequisite: BIOL 122 or its equivalent. Offered alternate years: 1995-1996.

303 - HISTOLOGY (3+3)
4.00 Credit(s)
(Formerly 300). A study of the tissues that comprise the organ systems of the human body. Prerequisite: BIOL 122 or its equivalent. Offered alternate years: 1994-95.

305 - ENVIRONMENTAL TOXICOLOGY
3.00 Credit(s)
Consideration of effects of both man-made and natural toxic agents on living systems. Material will emphasize aspects of physiologic toxicity in both plant and animal systems. An understanding of basic chemical, physical and biologic principles will be required. Prerequisites: BIOL 121 and two courses in Chemistry.

308 - VASCULAR PLANT ANATOMY
4.00 Credit(s)
Introduction to general plant anatomy, morphology and cellular ultrastructure. Structures from all major plant organs will be examined in an evolutionary and ecological context. Prerequisites: BIOL 121 and 123. Offered alternate years: 1995-96.

310 - PLANT PHYSIOLOGY (3+3)
4.00 Credit(s)
An examination of various plant functions. Water relations, photosynthesis, metabolism and hormonal regulation of growth, development and stimulus response will be studied in detail with emphasis on cellular structure/function relationships. Prerequisites: BIOL 123 and CHEM 231 are required or permission of the instructor. Offered alternate years: 1994-1995.

311 - MICROBIOLOGY
4.00 Credit(s)
General survey of classical microorganisms with the emphasis of the course on the various groups of bacteria and viruses. Fungi, algae and protozoa will receive only brief mention. Significance of the taxa will be discussed in reference to medical, environmental and basic research importance. Laboratory techniques for culturing, identifying and manipulating microbes will be practiced. Prerequisites: BIOL 121, 122 and 123.

321 - INTRODUCTION TO IMMUNOLOGY
4.00 Credit(s)
Basic anatomical, physiological, and genetic principles of immunity with considerable reference to clinical and research applications. Laboratories involve performance and demonstration of various immunoassays currently used in most areas of biological inquiry. Prerequisites: BIOL 121 and 122. BIOL 124 recommended.

331 - PHYSIOLOGY 1 (3+0)
3.00 Credit(s)
A structural and functional approach to understanding the human body at an advanced level of study. Emphasis is placed on the integration of parameters from all levels of tissue and organ system function. Prerequisites: BIOL 124 and one year of chemistry.
332 - PHYSIOLOGY 2 (3+0)
3.00 Credit(s)
Continuation of 331. Prerequisite: BIOL 331.

333 - PHYSIOLOGY 3 (3+0)
3.00 Credit(s)
Continuation of 332. Prerequisite: BIOL 332.

334 - PHYSIOLOGY LAB 1 (0+3)
1.00 Credit(s)
Corequisite: BIOL 331.

335 - PHYSIOLOGY LAB 2 (0+3)
1.00 Credit(s)
Corequisite: BIOL 332.

336 - PHYSIOLOGY LAB 3 (0+3)
1.00 Credit(s)
Corequisite: BIOL 333.

343 - MICROTECHNIQUE (2+3)
3.00 Credit(s)
Principles and procedures used in the preparation of biological specimens for microscopic study. Open to students majoring in Biology. Offered alternate years: 1994-95.

351 - CELL BIOLOGY (3+3)
4.00 Credit(s)
The function, structure and growth of cells will be analyzed with an emphasis on experimental techniques. Cellular organelles studied include: endomembrane systems, ribosomes, mitochondria and cytoskeletal elements. Prerequisites: BIOL 121, 122, 123 and CHEM 173.

371 - ADVANCED MARINE BIOLOGY
4.00 Credit(s)
A detailed study of the unifying concepts of marine biology including biological, physical and chemical aspects. Emphasis will be on various organisms and their interactions with their environments. A two-week field trip to a selected marine environment is required. Prerequisites: BIOL 271 and permission of the instructor.

372 - TOPICS IN MARINE BIOLOGY
4.00 Credit(s)
Selected areas of marine biology may be selected by the student for in-depth study. Specific study areas include marine ichthyofauna, marine plankton, marine arthropods, marine molluscs, marine phycology, marine mammalogy, marine physiologist and others. A field experience will be required. Prerequisites: BIOL 371 and permission of the instructor.

383 - ANIMAL BEHAVIOR (ETHOLOGY) (3+2)
4.00 Credit(s)
Basic principles of the behavior and ethology of invertebrates and vertebrates, stressing observational and descriptive techniques. Offered alternate years: 1994-95. Prerequisites: BIOL 121, 122 and 223.

395 - BIOLOGICAL RESEARCH REPORT
1.00 Credit(s)
Working with a research advisor, the student will investigate the project proposed in BIOL 295, and will prepare and submit a written report in approved scientific format. This report must detail the progress of the student’s senior thesis research including a literature review and work completed to date. Attendance at all departmental and thesis seminars required. Prerequisite: BIOL 295.

423 - TOPICS IN ECOLOGY AND BIOGEOGRAPHY
3.00 Credit(s)
A study of the current literature on selected topics in Ecology and Biogeography. Prerequisite: BIOL 251 or permission of instructor. Offered alternate years: 1995-96. Can be repeated for credit.

451 - ADVANCED TOPICS IN CELL BIOLOGY (3+0)
3.00 Credit(s)
A study of the current literature on selected topics in cell biology. No topic will be repeated in a four year period, so the course may be repeated for credit. Prerequisite: BIOL 351 or PHBS 342. Offered on demand.

481 - INTERNSHIP PROGRAM
16.00 Credit(s)
Practical experience in areas such as wildlife biology, zookeeping, environmental monitoring, cardiopulmonary technology, pro-health programs and other specializations. Internships for which credit hours are also offered by another department are acceptable as long as the credit hours total 16 quarter hours. All departments involved must agree with the internship arrangement. Prerequisites: normally restricted to seniors, must be approved by biological sciences faculty, and the student must have a minimum of 3 years work in the fundamentals of biology and related areas.

490 - SPECIAL TOPICS IN BIOLOGICAL SCIENCES
1.00 to 4.00 Credit(s)
Courses in the following disciplines: entomology, herpetology, ichthyology, mammalogy, parasitology, ornithology, North American mammals, radiation biology and plant taxonomy.

BIOLOGICAL SCIENCES  61
494 - BIOLOGY SENIOR SEMINAR
1.00 Credit(s)
The seminar will consist of the presentation of a
library research topic in both written and oral
presentation formats. Additionally a biology
comprehensive examination must be passed
with a grade of 70% or better. Prerequisite:
Junior or senior status.

495 - SENIOR THESIS SEMINAR
1.00 Credit(s)
Written and oral presentation of the senior
research project. The completed research
project will be written in a format acceptable for
submission to a scientific journal and presented
during a formal seminar. Attendance at all
departamental and thesis seminars required.
Prerequisite: BIOL 395.

497 - INDEPENDENT STUDY IN BIOLOGY
1.00 to 3.00 Credit(s)
Graded S/U.

Subject - Medical Technology
(MDTC)

460 - ORIENTATION TO MEDICAL TECHNOLOGY
2.00 Credit(s)
An introduction to basic laboratory instruments,
methods, procedures, terminology, ethics and
safety.

461 - CLINICAL BACTERIOLOGY - LECTURE
4.00 Credit(s)
Study of micro-organisms found in human
infection, principles of isolation and identification.

462 - CLINICAL MYCOLOGY - LECTURE
2.00 Credit(s)
Study of fungi found in human infection, principles
of isolation and identification.

463 - CLINICAL PARASITOLOGY - LECTURE
2.00 Credit(s)
Study of parasites found in human infection,
principles of isolation and identification.

464 - CLINICAL MICROBIOLOGY LABORATORY
6.00 Credit(s)
Laboratory methods, procedures, and instru-
m entation to correlate with Bacteriology, Mycology,
and Parasitology lectures.

465 - IMMUNOHEMATOLOGY LECTURE
3.00 Credit(s)
Theory of human blood groups, compatibility
testing, detection, and identification of antibodies.

466 - IMMUNOHEMATOLOGY LABORATORY
3.00 Credit(s)
Laboratory methods and instrumentation to
correlate with lectures.

467 - CLINICAL IMMUNOLOGY LECTURE
2.00 Credit(s)
Theory of information and detection of antigens
and antibodies in disease states, both in vivo and
in vitro.

468 - CLINICAL IMMUNOLOGY LABORATORY
2.00 Credit(s)
Laboratory methods and instrumentation to
correlate with lectures.

469 - CLINICAL HEMATOLOGY/COAGULATION
LECTURE
4.00 Credit(s)
Theory of hematopoiesis, cell morphology, blood
dyscrasias, coagulation mechanism and
abnormalities. Correlation of findings with
human physiology and disease.

470 - CLINICAL HEMATOLOGY/COAGULATION
LABORATORY
4.00 Credit(s)
Laboratory instrumentation and procedures to
correlate with the lectures.

471 - CLINICAL CHEMISTRY LECTURE
8.00 Credit(s)
Theory of chemical constituents of body fluids in
normal and disease states. Includes General
Chemistry, Toxicology and DIA, Instrumentation,
Statistics and Quality Control.

472 - CLINICAL CHEMISTRY LABORATORY
8.00 Credit(s)
Laboratory instrumentation and procedures to
correlate with the lectures.

473 - URINALYSIS LECTURE
1.00 Credit(s)
Physiology of urinary system, related diseases
and correlation to disease states.

474 - URINALYSIS LABORATORY
1.00 Credit(s)
Laboratory methods and instrumentation to
correlate with lectures.

475 - LABORATORY MANAGEMENT LEC-
TURE P/F
1.00 Credit(s)
Theory and discussion of supervision and
management.
476 - CLINICAL PATHOLOGY
1.00 Credit(s)
Correlation of clinical laboratory findings with different human physiological states. Consists of case studies, review sessions, management and education orientation. Prerequisite: Enrollment limited to medical technology interns.

477 - CLINICAL PATHOLOGY SEMINAR
1.00 Credit(s)
Consists of presentation and discussion of special topics and current developments in clinical laboratory medicine. Topics are presented by students and guest lecturers. Prerequisite: Enrollment limited to medical technology interns.

DEPARTMENT OF CHEMISTRY

Professors Haight (Chair), Canagaratna, Hawbecker, Kurtz, Lamb; Associate Professors J. Hruschka, Peterson, Sadurski; Assistant Professor J. Gray; Visiting Instructor Garver.

The objectives of this department are to help serve the cultural need for an understanding of science in our modern society, to provide the basic preparation in chemistry for those who plan to enter the chemical industry, the teaching profession, pursue graduate study in chemistry or related fields, and to serve those who need an understanding of the fundamentals of this physical science as a prerequisite to various professional studies and career goals.

The department of chemistry is on the list of departments approved by the American Chemical Society for the professional education of chemists and biochemists and offers both the Bachelor of Science and Bachelor of Arts degrees.

Departmental Majors Four major programs are available in the department of chemistry. They are the American Chemical Society certified program, the basic program, the modified program, and the biochemistry program.

The American Chemical Society Certified Major in Chemistry The student who wishes to be certified as a professional chemist by the American Chemical Society may complete a program leading to either the bachelor of science or the bachelor of arts degree. This certified program is designed to prepare students for direct entry into the chemical industry or for graduate studies in chemistry. The following chemistry core courses are required for the certified degree: Chemistry 000, 181-182-183, 241-242-243, 300, 341-342-343, 304, 324, 351 and 494. To this core must be added a "professional" component which includes Chemistry 451 and 462 plus a minimum of 9 credit hours from among the following: Chemistry 311; Chemistry 473; Chemistry 474; Chemistry 481-482-483, and advanced biochemistry, mathematics, computer science, or physics courses approved by the department. The following cognate courses must also be added: Mathematics 163, 261, 262, and 272; Computer Science 134 or 230, and Physics 231-232-233 with related laboratories.

The Basic Major Basic bachelor of science and bachelor of arts degree programs are also available for those who wish to become chemists, follow a preprofessional program such as premedicine or pursue graduate studies. The student who wishes to complete a basic major must complete the chemistry core and the cognate courses listed above. The "professional" component is not required.

The Modified Major A modified major program is available for those who wish to prepare for related areas such as certain medical science specialties, sales or management in the technical industries, patent law, scientific communication and information retrieval, and environmental science. Entrance into the modified major program must be approved by the departmental faculty. It is expected that a second major or teacher certification will be completed along with this modified major. The specific modified program will dictate whether the BS or BA degree is chosen. This program permits more course selection in areas that support the student's chemistry-related career goal. The student participates in designing his or her own program within the following framework: Chemistry 000, 181-182-183, 241-242-243, 494, plus three courses from among 304, 311, 321 or 324, 337, 351, and a minimum of 12 credit hours in 300-400 level courses in the division of mathematics and natural sciences or other 300-400 level courses acceptable to the department. If Chemistry 311 is chosen as one of the three courses noted above, the other two courses must be distributed as follows: either 304 or 321 or 324 and either 337 or 351. Biochemistry 341 plus 342 may be substituted for Chemistry 311. In addition, two of the following three cognate units must be selected: 1. Physics 211-212-213 or 231-232-233 with related laboratories; 2. Biology 121-122-123; 3. three mathematics courses at the level of Mathematics 120 and above. It is recommended that the college computer science requirement be met by taking a course in the department of mathematics and computer science.
The American Chemical Society Certified Major in Biochemistry Students who complete the Bachelor of Science degree in biochemistry will be certified by the American Chemical Society. This program is designed to prepare students for professional employment as biochemists or for graduate studies in biochemistry and related fields. The following core courses are required: Chemistry 000, 181-182-183, 241-242-243, 300, 341-342-343, 311, 321, 351 and 494. Also required is Biology 121-122-123. To this core must be added Chemistry 312 or Biochemistry 342 and Chemistry 411, 414, 415 and 416 plus at least two different courses from among: Biology 210, 311, 321, 351 and 451. The following cognate courses must also be added: Mathematics 163, 261, 262 and 272; Computer Science 134 or 230, and Physics 231-232-233 with related laboratories.

Minor in Chemistry A student wishing to receive a minor in chemistry should complete the following: Chemistry 181-182-183 (or 171-172-173) and 241-242 (or 231-232) plus three additional courses from among Chemistry 243 (or 233), 304, 321 or 324, 337, 351, 363, and Chemistry 311 or Biochemistry 341.

Minor in Biochemistry A student wishing to receive a minor in biochemistry should complete the following: Chemistry 181-182-183 (or 171-172-173), 241-242-243 (or 231-232-233), 311 or Biochemistry 341, Chemistry 312 or Biochemistry 342, and Biochemistry Laboratory 414-415.

Subject - Chemistry (CHEM)

000 - ORIENTATION (1+0)
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning a program of courses, university catalog, career planning and library.
Required of department majors. Course marked S or U.

100 - CHEMISTRY (3+1)
4.00 Credit(s)
The behavior of matter at the macroscopic level and explanations of this behavior using molecular-level models. Applications in everyday life. Chemistry 171 recommended for science majors. Credit may be received for either CHEM 100 or CHEM 171 but not for both.

102 - PHYSICAL AND EARTH SCIENCES FOR ELEMENTARY EDUCATION MAJORS
4.00 Credit(s)
Expressions of the nature of matter and energy in the earth (geology), atmosphere (meteorology), and space (astronomy). Includes major conceptual models in these disciplines. For Elementary Education majors only. Prerequisite: PHYS 101.

108 - BASICS OF CHEMISTRY (4+0)
4.00 Credit(s)
Basic skills and concepts needed to understand the nature of chemical processes. Recommended for students with little or no previous background in chemistry prior to entry into CHEM 171. CHEM 108 DOES NOT SATISFY A GENERAL EDUCATION REQUIREMENT AND IT CANNOT BE USED TO SATISFY SPECIFIC DEPARTMENTAL OR PROGRAM REQUIREMENTS.

114 - CHEMISTRY OF LIFE (4+0)
4.00 Credit(s)
Chemical nature of the major groups of biological molecules and their activities in living systems. Credit may not be received for both CHEM 114 and CHEM 311 or CHEM 312 or PHBS 341 or PHBS 342. Offered alternate years. Prerequisite: CHEM 100 or 162 or 171.

115 - ENVIRONMENTAL CHEMISTRY (4+0)
4.00 Credit(s)
Chemical aspects of the natural and polluted environment. Particular emphasis on air and water pollution. Prerequisite: CHEM 100 or 162 or 171.

162 - CHEMISTRY-CONCEPTS AND APPLICATIONS 1 (4+0)
4.00 Credit(s)
Chemistry for engineering students. Basic chemical theories applied to practical situations. Prerequisites: High school chemistry; MATH 261; PHYS 231, 232, 233, 234, 235, 236 or equivalent of the above or approval of the department chairman.

163 - CHEMISTRY-CONCEPTS AND APPLICATIONS 2 (3+3)
4.00 Credit(s)
Continuation of CHEM 162. Laboratory reinforces the lecture program. Prerequisite: CHEM 162.
171 - INTRODUCTORY CHEMISTRY 1 (4+3)
5.00 Credit(s)
Macroscopic concepts of the elements, compounds and reactions. Stoichiometry, thermochemistry and properties of ideal gases as applied to reactive systems. Emphasis on acid-base and redox chemistry. Laboratory relates physical observations to principles presented in lecture. Credit may be received for either CHEM 100 or CHEM 171 but not for both. Prerequisite: High school chemistry or equivalent.

172 - INTRODUCTORY CHEMISTRY 2 (4+3)
5.00 Credit(s)
Microscopic concepts of atomic theory and its application to bonding, molecular structure, non-ideality of state, condensed phases, chemical reactions and mechanisms. Laboratory supports principles presented in lecture, including spectroscopy. Prerequisite: CHEM 171.

173 - INTRODUCTORY CHEMISTRY 3 (4+3)
5.00 Credit(s)
Physical principles controlling chemical reactions including kinetics, thermodynamics, electrochemistry, equilibrium conditions and applications to group chemistry. Laboratory supports principles presented in lecture, including trends in group chemistry. Prerequisite: CHEM 172.

181 - INTRODUCTORY CHEMISTRY FOR MAJORS 1 (4+3)
5.00 Credit(s)
Same lecture and laboratory as CHEM 171.

182 - INTRODUCTORY CHEMISTRY FOR MAJORS 2 (4+3)
5.00 Credit(s)
Same lecture and laboratory as CHEM 172. Prerequisite: CHEM 181.

183 - INTRODUCTORY CHEMISTRY FOR MAJORS 3 (4+3)
5.00 Credit(s)
Same lecture and laboratory as CHEM 173. Prerequisite: CHEM 182.

221 - FUNDAMENTALS OF ORGANIC CHEMISTRY 1 (3+0)
3.00 Credit(s)
First course of a sequence for pharmacy students. Students majoring in science and premedical students must take CHEM 231 or 241. Bonding, energetics, structure and properties of organic molecules with emphasis on alkanes, alkenes and alcohols. Nomenclature and reaction mechanisms. Prerequisite: CHEM 123 or 173.

222 - FUNDAMENTALS OF ORGANIC CHEMISTRY 2 (3+0)
3.00 Credit(s)
Second course of a sequence for pharmacy students. Continuation of CHEM 221 with emphasis on haloalkanes, organometallics, ethers, alkynes and aromatic hydrocarbons. Sn, E, SEAr and SnAr mechanisms. Some synthetic considerations and use of ir, nmr and uv spectroscopy for structure determination. Prerequisite: CHEM 221.

223 - FUNDAMENTALS OF ORGANIC CHEMISTRY 3 (3+0)
3.00 Credit(s)
Final course of the sequence for pharmacy students. Carbonyl functional groups, organic nitrogen compounds, heterocycles, active methylene compounds and introduction to carbohydrates, amino acids and proteins. Prerequisite: CHEM 222.

231 - ORGANIC CHEMISTRY 1 (3+3)
4.00 Credit(s)
First course in the organic chemistry sequence for science and premedical students. Bonding, energetics, synthesis and mechanisms emphasized throughout. Electronic structure, acid-base and redox relationships among functional groups, conformational and configurational isomers, IUPAC nomenclature, Sn and E reactivity, Sr and formation of alkenes and alkynes. Chromatographic and classical separation techniques introduced in laboratory. Prerequisite: CHEM 173 or 183.

232 - ORGANIC CHEMISTRY 2 (3+3)
4.00 Credit(s)
Second course in the organic chemistry sequence for science and premedical students. Mass, ir, uv and nmr spectroscopy in structure determination, alcohol synthesis via cations, hydroboration, organometallics, nucleophilic attack on carbonyl functional groups, polyenes, aromaticity, SeAr and SnAr processes. Laboratory includes applications of spectroscopy, synthetic and stereochemical applications of carbonyl and alkene addition, terpene identification and aromatic substitution mechanisms. Prerequisite: CHEM 231 or 241.
233 - ORGANIC CHEMISTRY 3 (3+3)  
4.00 Credit(s)  
Final course in the organic chemistry sequence for science and premedical students. Chemistry majors must register for CHEM 243. Organic nitrogen chemistry, carbohydrates, enolate condensations and alkylation, conjugate addition, polymer information and classification, amino acids, peptides and proteins. Organic syntheses in laboratory. Prerequisite: CHEM 232 or 242.

311 - CHEMISTRY OF BIOLOGICAL MOLECULES (4+0)  
4.00 Credit(s)  
Structures and properties of the major classes of biological molecules with emphasis on the physical properties of macromolecules. Includes thermodynamics, enzyme kinetics and mechanisms, coenzymes, isolation and characterization techniques and an introduction to the design and regulation of metabolic pathways. Prerequisites: CHEM 233 or 243 and MATH 262.

312 - CHEMISTRY OF METABOLISM (4+0)  
4.00 Credit(s)  
Intermediary metabolism with emphasis on the chemical reactions of glycolysis, the citric acid cycle, lipid and amino acid synthesis and degradation, and nucleic acid metabolism. Prerequisite: CHEM 311.

321 - INTERMEDIATE INORGANIC CHEMISTRY-BIOCHEMISTRY MAJORS (3+3)  
4.00 Credit(s)  
Same lecture as CHEM 324 with a different laboratory. Bonding, structures, preparation, properties, compounds, and reactions of main group and transition metal elements. Laboratory involves basic methods of synthesis and characterization with selected experiments for the biochemistry major. Prerequisite: CHEM 243 or approval of the department chairman.

324 - INTERMEDIATE INORGANIC CHEMISTRY-CHEMISTRY MAJORS (3+3)  
4.00 Credit(s)  
Same lecture as CHEM 321 with a different laboratory. Bonding, structures, preparation, properties, compounds, and reactions of main group and transition metal elements. Laboratory involves basic methods of synthesis and characterization. Prerequisite: CHEM 243 or approval of the department chairman.

337 - ELEMENTS OF PHYSICAL CHEMISTRY (4+0)  
4.00 Credit(s)  
Principles and applications of selected areas of physical chemistry including thermodynamics and kinetics. Intended for students in the modified chemistry major or chemistry minor who wish to enhance their chemistry background. Prerequisites: CHEM 163 or 232 or 242, and three courses from the Department of Mathematics and Computer Science. Offered alternate years.
341 - PHYSICAL CHEMISTRY 1 (3+3)
4.00 Credit(s)
Classical thermodynamics. Laboratory illustrates principles and applications. Knowledge of computer programming recommended. Prerequisites: CHEM 233 or 243; MATH 262 and 272; PHYS 231, 232 and 233 with related laboratories.

342 - PHYSICAL CHEMISTRY 2 (3+3)
4.00 Credit(s)
Quantum mechanics. Laboratory illustrates applications in spectroscopy. Knowledge of elementary differential equations recommended. Prerequisite: CHEM 341.

343 - PHYSICAL CHEMISTRY 3 (3+3)
4.00 Credit(s)
Statistical thermodynamics, kinetic molecular theory and chemical kinetics. Laboratory illustrates principles and applications. Prerequisite: CHEM 342.

351 - INTERMEDIATE QUANTITATIVE ANALYSIS (2+6)
4.00 Credit(s)
Practice and principles of modern chemical methods of analysis. Introduction to instrumental methods of analysis. A terminal course for the non-major and an intermediate course for the major. Prerequisite: CHEM 173 or 183.

363 - APPLICATIONS OF CHEMICAL INSTRUMENTATION (1+5)
3.00 Credit(s)
Principles and methods of instrumental measurements for the analysis of real samples. Lecture and laboratory integrated to deal with the collection, preparation and analysis of environmental, geological, biological and industrial samples. Automatic sequencing and process analysis. Prerequisite: CHEM 163 or 233 or 243. Offered alternate years.

390 - SPECIAL TOPICS IN CHEMISTRY
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

411 - ADVANCED TOPICS IN BIOCHEMISTRY (3+0)
3.00 Credit(s)
Behavior and characterization of biological macromolecules. Biochemical basis for hormone action, gene expression and photosynthesis. Prerequisites: CHEM 312 or PHBS 342 and CHEM 343 or approval of the department chairman.

414 - BIOCHEMISTRY LABORATORY 1 (0+6)
2.00 Credit(s)
Chemical and physical properties of biological molecules and an introduction to enzyme kinetics. Prerequisite: CHEM 312 or PHBS 342.

415 - BIOCHEMISTRY LABORATORY 2 (0+6)
2.00 Credit(s)
Protein, nucleic acid, lipid and carbohydrate isolation and characterization. Prerequisite: CHEM 414.

416 - BIOCHEMISTRY LABORATORY 3 (0+6)
2.00 Credit(s)
Modern methods of nucleic acid analysis with an emphasis on recombinant DNA techniques. Prerequisite: CHEM 415.

451 - ADVANCED INORGANIC CHEMISTRY (3+3)
4.00 Credit(s)
Theory, bonding, spectroscopy, reaction mechanisms and organometallic compounds. Laboratory involves advanced methods of synthesis and characterization. Prerequisites: CHEM 321 or 324 and 343 or approval of the department chairman.

462 - ADVANCED ANALYTICAL CHEMISTRY (3+3)
4.00 Credit(s)
Theoretical and experimental study of modern methods of instrumental analysis. Principles, design and use of chemical instrumentation. Laboratory stresses independent, investigative experimentation. Prerequisites: CHEM 343 and 351 or approval of the department chairman.
Departmental Objectives

1. To emphasize a strong liberal arts education for entering the job market or graduate study.
2. To provide a flexible program that adapts easily to individual needs and interests while maintaining professional standards.
3. To encourage critical thinking by providing students with opportunities for practical application of both historical and contemporary communication theory.
4. To encourage participation in and appreciation of the fine arts, thereby developing aesthetic standards.

The course offerings of the department are structured to promote an understanding of how man communicates theoretically, practically, and aesthetically. Students majoring in Communication Arts pursue a concentration particular to their professional and educational goals. Concentrations are offered in the following areas:

- **Speech Communication**
- **Theatre**
- **Public Relations**
- **Telecommunications**
- **Musical Theatre**

Some concentrations require internships; some concentrations also require cognate courses outside the department.

Departmental majors as well as dual majors whose primary major is from another department/college may elect to pursue more than one concentration.

Beyond the traditional classroom experiences, students are encouraged to become involved in a variety of departmental activities. WONB-FM, the campus radio station, allows students to gain experience in broadcasting and management. In the Public Relations Student Society of America, students gain professional learning experiences through networking, workshops, campaign exposure, and service. In forensics, formal debate is conducted on both national topics and off-topic arguments, and individual events include competition in persuasive, informative, impromptu, and extemporaneous speaking, and oral interpretation of literature. Students may also act and engage in technical work on musicals, readers theatre, new works, and traditional plays. Through all these activities, the department provides many opportunities for student involvement.

Departmental Curriculum

The curriculum of a Communication Arts major is divided into three elements:

I. Concentration Requirements
II. Concentration Electives (Departmental)
III. Concentration Cognates
   (non-departmental)
Communication Arts with Speech Concentration (48 hours)

I. Concentration Requirements: (44 hours)
- Argumentation (COMM 121)
- Intro. to Telecomm. (COMM 150)
- Public Speaking (COMM 211)
- Bus. & Prof. Speaking (COMM 212)
- Interviewing (COMM 221)
- Interpersonal Communication (COMM 225)
- Communication Theory (COMM 230)
- Oral Interp. of Lit. (COMM 241)
- Advanced Public Address (COMM 311)
- Group Communication (COMM 321)
- Rhetoric of Politics (COMM 421)
- Capstone Experience

II. Concentration Electives (Choose two)
- Parliamentary Procedure (COMM 240)
- Voice & Diction (COMM 340)
- Internship (COMM 335) (2 hrs. min.)
- Indep. Study (COMM 499) (2 hrs. min.)

*Students seeking a career in the business or management sector may consider a Capstone Experience in either Independent Study or Internship

**If a student is preparing for graduate school, the suggested Capstone Experience is Independent Study

***If a student is seeking secondary teaching certification, the following are required.

****Student teaching as Capstone Exp.
- Speech Team (COMM 201, 2 hrs. min.)
- Debate Team (COMM 202, 2 hrs. min.)

Speech Communication Minor (30 hours)
- Intro. to Telecomm. (COMM 150)
- Bus. & Prof. Speaking (COMM 212)
- Interpersonal Comm. (COMM 225)
- Communication Theory (COMM 230)
- Parliamentary Procedure (COMM 240)
- Oral Interp. of Lit. (COMM 241)
- Group Communication (COMM 321)
- Rhetoric of Politics (COMM 421)

Communication Arts with Theatre Concentration (48 hours)

I. Concentration Requirements: (24 hours)
- Intro. to Theatre (COMM 106)
- Acting (COMM 260)
- Theatre Technology (COMM 275)
- Production Practicum (COMM 276)
- World Theatre History (COMM 291)
- Production Analysis (COMM 385)

II. Concentration Electives (20 hours)
- Tap Dance I or II (COMM 115 or 215)
- Jazz Dance I or II (COMM 116 or 216)
- Ballet I or II (COMM 117 or 217)
- Modern Dance I or II (COMM 118 or 218)
- Oral Interp. of Literature (COMM 241)
- Acting (COMM 260) (4 add. hrs. beyond required)
- Perf. Practicum (COMM 261)
- Musical Theatre Perf. (COMM 265)
- Prod. Practicum (COMM 276)
- Make-up (COMM 278)
- Stage Management (COMM 285)
- Playwriting (COMM 286)
- Voice & Diction (COMM 340)
- Topics: Theatre Design (COMM 375)
- Design Practicum (COMM 378)
- Arts Management (COMM 380)
- Directing (COMM 386)
- Cinema (COMM 395)
- Directing Practicum (COMM 387)
- Special Topics

III. Required Cognate (4 hrs.)
- One course from the following:
  - Modern World Drama (ENGL 208)
  - Shakespeare I (ENGL 311)
  - Shakespeare II (ENGL 312)
  - Aesthetics (PHIL 341)

Theatre Minor (28 hours)
- Intro. to Theatre (COMM 106)
- Acting (COMM 260)
- Theatre Tech. (COMM 275)
- Production Analysis (COMM 285)
- World Theatre History (COMM 291)
- Directing (COMM 386)
- Plus 4 hrs. of theatre electives other than practicum.

Communication Arts with Public Relations Concentration (56-68 hours)

I. Concentration Requirements (32-44 hours)
- Intro. to Public Relations (COMM 130)
- Public Relations Writing (COMM 236)
- Publicity, Media & Campaigns (COMM 330)
- Public Relations Research (COMM 342)
- Public Relations Case Studies (COMM 430)
- Newswriting 1 (ENGL 241)
- Intro. to Comm. Tech. (TECH 240)
- Internship (COMM 335) (4-16 hours)

II. Concentration Electives (16 hours)
- Choose two:
  - Special Topics in PR
  - Interpersonal Comm. (COMM 225)
  - Group Communication (COMM 321)
  - Public Speaking (COMM 211)
Prelaw Program  The department cooperates with the Pettit College of Law at Ohio Northern University relative to the "guaranteed admission" prelaw program. Those interested in the program and a course of studies within the department should contact the chair for information and/or advising.

Business Option  A Business Option is available for any student majoring in Communication Arts. The courses for the option are in addition to concentration coursework. The option is designed to provide a business focus for students within their communication career goals. The option consists of:

- Principles of Accounting 1 (ACCT 211)
- Principles of Accounting 2 (ACCT 212)
- Principles of Microeconomics (ECON 202)
- Business Law I (ABUS 312)
- Principles of Management (MGMT 330)
- Marketing (MRKT 351)
- Advertising (MRKT 372)

**Subject - Communication Arts (COMM)**

**000 - ORIENTATION**

1.00 Credit(s)
Familiarization with the departmental requirements for majors, planning a program of courses, university catalog and library. Required of departmental majors. Graded S/U.

**105 - THEATRE APPRECIATION**

4.00 Credit(s)
An introduction to the theatre experience as an art form through the study of its origin and development, and its contemporary theory and practice. For the non-major. A terminal course which will not serve to answer any Communication Arts major sequence. May not be taken following a successful enrollment in COMM 106. (Discipline: Theatre)

**106 - INTRODUCTION TO THEATRE**

4.00 Credit(s)
Introduction to dramatic structure and genres, production styles, and the roles of artists within the theatre. Overview of the history of theatre's place within society through the examination of selected dramatic texts. Primarily for majors. (Discipline: Theatre)

**115 - TAP DANCING 1**

2.00 Credit(s)
An introduction to tap dancing, taught in a studio format. The course is designed for the student with little or no experience in tap dancing. May be repeated for a total of 8 credits. (Discipline: Theatre)

**116 - JAZZ DANCE 1**

2.00 Credit(s)
An introduction to jazz dancing for the musical theatre, taught in a studio format. The course is designed for the student with little or no experience in jazz dancing. May be repeated for a total of 8 credits. (Discipline: Theatre)

**117 - BALLET 1**

2.00 Credit(s)
An introduction to ballet dancing, taught in a studio format. The course is designed for the student with little or no experience in ballet dancing. May be repeated for a total of 8 credits. (Discipline: Theatre)

**118 - MODERN DANCE 1**

2.00 Credit(s)
An introduction to Modern Dance, taught in the studio format. The course is designed for the student with little or no experience in modern dance. May be repeated for a total of six credits. (Discipline: Theatre)

**121 - ARGUMENTATION**

4.00 Credit(s)
Course focuses on basic skills in critical thinking by applying elementary debate theory through oral and written activities. (Discipline: Speech Communication)

**130 - INTRODUCTION TO PUBLIC RELATIONS**

4.00 Credit(s)
A course which examines the role, function, and responsibilities of the public relations practitioner within organizations. (Discipline: Public Relations)

**150 - INTRODUCTION TO TELECOMMUNICATIONS**

4.00 Credit(s)
A survey course that examines various aspects of broadcasting, cable, and the emerging electronic media. (Discipline: Telecommunications)

**190 - SPECIAL TOPICS IN COMMUNICATION ARTS**

1.00 to 4.00 Credit(s)
201 - SPEECH TEAM
1.00 to 4.00 Credit(s)
An extra-curricular activity which includes competition at speech tournaments in persuasive, informative, impromptu, and extemporaneous speaking as well as the oral interpretation of prose and poetry. May be repeated for graduation credit by non-majors up to a maximum of 8 hours. Graded S/U. (Discipline: Speech Communication and Theatre)

202 - DEBATE TEAM
1.00 to 4.00 Credit(s)
Extra-curricular debate activities including participation in debate tournaments on topics of national interest. May be repeated for graduation credit by non-majors up to a maximum of 8 hours. Graded S/U. (Discipline: Speech Communication)

203 - PUBLIC RELATIONS PRACTICUM
1.00 to 4.00 Credit(s)
Public relations practicum provides students the opportunity to experience public relations firsthand through professional involvement with service and non-profit projects. (Discipline: Public Relations)

211 - PUBLIC SPEAKING
4.00 Credit(s)
Basic principles of preparation and delivery of original informative and persuasive speeches. (Discipline: Speech Communication)

212 - BUSINESS AND PROFESSIONAL SPEAKING
4.00 Credit(s)
A course to assist the student in acquiring the knowledge and skills especially pertinent to meeting the speech communication tasks of a business or professional person. Prerequisite: COMM 211. (Discipline: Speech Communication)

215 - TAP DANCING 2
2.00 Credit(s)
A studio tap dance class for the intermediate and advanced student. May be repeated for a total of 8 credits. Permission of the instructor is required for admission. (Discipline: Theatre)

216 - JAZZ DANCE 2
2.00 Credit(s)
A studio jazz dance class for the intermediate and advanced student. May be repeated for a total of 8 credits. Permission of the instructor is required for admission. (Discipline: Theatre)

217 - BALLET 2
2.00 Credit(s)
A studio ballet class for the intermediate and advanced student. At the discretion of the instructor, this class may include pointe work and partnering work for students with strong technique. May be repeated for a total of eight credits. Permission of the instructor required for admission. (Discipline: Theatre)

218 - MODERN DANCE 2
2.00 Credit(s)
A modern dance studio class for the intermediate and advanced student. May be repeated for a total of eight credits. Prerequisite: COMM 118 or permission of the instructor. (Discipline: Theatre)

221 - INTERVIEWING
4.00 Credit(s)
The basic principles and structures of interviewing are examined and applied to interview situations such as employment, performance appraisal, journalism, etc. (Discipline: Speech Communication)

225 - INTERPERSONAL COMMUNICATION
4.00 Credit(s)
This course explores a range of theories and issues in interpersonal communication which will allow students to develop analytical skills necessary for evaluating dyadic encounters. (Discipline: Speech Communication)

230 - COMMUNICATION THEORY
4.00 Credit(s)
The course is designed to provide a framework of knowledge about the theories, nature, and dynamics of human communication/interaction. Prerequisite: COMM 211 or 225. (Discipline: Speech Communication)

236 - PUBLIC RELATIONS WRITING
4.00 Credit(s)
Study of basic concepts for public relations writing projects and production of written public relations materials. Use of the computers for word-processing and page layout programs are also included. The course consists of lectures, discussions, and supervised writing labs. Prerequisite: COMM 130. (Discipline: Public Relations)

240 - PARLIAMENTARY PROCEDURE
2.00 Credit(s)
Methods of conducting formal meetings by parliamentary rules. (Discipline: Speech Communication)
241 - ORAL INTERPRETATION OF LITERATURE
4.00 Credit(s)
Analyzing prose, poetry, and dramatic literature for individual and group presentations in class. (Discipline: Speech Communication and Theatre)

252 - TELECOMMUNICATIONS PRACTICUM
1.00 to 4.00 Credit(s)
Production practicum utilizing the facilities of WONB Radio and ONU Cable Television. Telecommunications majors must schedule twelve hours of practicum time, to be evenly dispersed throughout their college career. (Discipline: Telecommunications)

256 - TELECOMMUNICATIONS WRITING
4.00 Credit(s)
A study of the principles and techniques of copywriting for radio and television, corporate audio/video productions and the electronic media. Prerequisite: COMM 150. (Discipline: Telecommunications)

260 - ACTING
4.00 Credit(s)
A studio class designed to introduce and develop fundamental acting skills through readings, discussions, exercises, monologues, and scenes. Course may be repeated for a maximum of 8 hours by non-majors for graduation credit and for a maximum of 12 hours by majors for graduation credit. (Discipline: Theatre)

261 - PERFORMANCE PRACTICUM
1.00 to 4.00 Credit(s)
Open only to those students who have auditioned for and have been awarded roles in University Theatre or Studio Theatre productions. 1-4 hours credit depending on role. May be repeated by non-majors for graduation credit up to a maximum of 8 hours. Prerequisite: Permission of director. (Discipline: Theatre)

265 - MUSICAL THEATRE PERFORMANCE STUDIES
4.00 Credit(s)
A study of performance techniques for musical theatre. Students will also prepare and present scenes and songs from musicals. (Discipline: Theatre)

270 - DANCE COMPOSITION
4.00 Credit(s)
Study of principles general to all choreographic compositional styles and application of these principles through weekly choreographic compositional projects. There will also be in-class performances. (Discipline: Theatre)

275 - THEATRE TECHNOLOGY
4.00 Credit(s)
Introduction to theoretical and practical work in the fundamentals of technical theatre production. Content includes scenic construction, property construction, theatrical sound, basic drafting, and basic design theory. Required lab work. (Discipline: Theatre)

276 - PRODUCTION PRACTICUM
1.00 to 4.00 Credit(s)
Participation in technical/production aspects of University and/or Studio Theatre productions. A maximum of 8 hours may be taken by non-majors for graduation credit. (Discipline: Theatre)

278 - MAKEUP
2.00 Credit(s)
Methods and practice in the creation and application of stage makeup. Students may comprise makeup crews for University Theatre and Studio Theatre productions. (Discipline: Theatre)

280 - DANCE HISTORY
4.00 Credit(s)
The study of the evolution of dance through the ages. Ethnic dance styles and dance as a performance art will be studied. Some reconstruction of cultural and historical dance will be included in the coursework. (Discipline: Theatre)

285 - STAGE MANAGEMENT
2.00 Credit(s)
A study of the principles and practices of stage management and logistical organization of commercial and noncommercial theatre. Content includes scheduling, pre-production planning, auditions, rehearsals, performance procedures, budgeting, and company organization and structure. (Discipline: Theatre)

286 - PLAYWRITING
4.00 Credit(s)
The course explores the principles of writing plays by examining the process for selecting and arranging dramatic material for an artistic purpose. (Discipline: Theatre)

290 - SPECIAL TOPICS IN COMMUNICATION ARTS
1.00 to 4.00 Credit(s)

291 - WORLD THEATRE HISTORY
4.00 Credit(s)
A survey of the history and social impact of the theatre in Western and non-Western cultures from ancient times to the present. (Discipline: Theatre)
311 - ADVANCED PUBLIC ADDRESS
4.00 Credit(s)
An advanced public speaking course with an emphasis on persuasive theory and techniques. Prerequisite: COMM 211. (Discipline: Speech Communication)

321 - GROUP COMMUNICATION
4.00 Credit(s)
Group theory and problem solving methods are examined; course focuses on the process of analyzing problems to implementing solutions. Prerequisite: COMM 211. (Discipline: Speech Communication)

330 - PUBLICITY, MEDIA, AND CAMPAIGNS
4.00 Credit(s)
A course analyzing techniques for motivating target audiences along with practical analysis and preparation of communication materials to elicit reactions or support from specialized groups. Prerequisite: COMM 130. (Discipline: Public Relations)

335 - INTERNSHIP
1.00 to 16.00 Credit(s)
A skills course designed to blend classroom theory with practical experience through working in an outside organization. Approval of department required prior to registration for course. One to 16 hours credit toward graduation for the major. (Discipline: Public Relations and Telecommunications)

340 - VOICE AND DICTION
2.00 Credit(s)
Voice and speech production; intensive drill, on a phonetic basis, in articulating the sounds which make up the English language, with attention to the production of good vocal quality and expression. (Disciplines: Speech Communication and Theatre)

342 - PUBLIC RELATIONS RESEARCH FOR PLANNING AND EVALUATION
4.00 Credit(s)
A course designed to study the planning and evaluation process of public relations programs. It will emphasize the difference between public relations research and social science research methods. Prerequisite: COMM 130. (Discipline: Public Relations)

351 - AUDIO/VIDEO PRODUCTION
4.00 Credit(s)
A study of the principles and techniques of audio and video production. Course will include lab times utilizing the facilities of WONB Radio and ONU Cable Television. Prerequisite: COMM 256. (Discipline: Telecommunications)

355 - BROADCAST JOURNALISM
4.00 Credit(s)
An examination of the principles of news gathering and reporting primarily for television and radio. Subjective and objective analysis of news, its presentation, and its effects. Practical assignments emphasized. Prerequisite: COMM 150. (Discipline: Telecommunications)

375 - TOPICS IN THEATRE DESIGN
4.00 Credit(s)
Course explores each of the basic design elements of theatre: Scenic, Lighting and Costume. Only one design area is presented per term. Course may be repeated for a maximum of 12 hours for graduation credit. Prerequisite: COMM 275. (Discipline: Theatre)

378 - DESIGN PRACTICUM
1.00 to 4.00 Credit(s)
The actual design, supervision, and execution of lights, sets, costumes, sound, or props for a main stage or studio production. The student is assigned a departmental advisor for the project. Course may be repeated for a maximum of 8 hours by non-majors for graduation credit, and for a maximum of 12 hours by majors for graduation credit. Prerequisite: COMM 375 and/or permission of the instructor. (Discipline: Theatre)

380 - ARTS MANAGEMENT
2.00 Credit(s)
Explores the management of commercial and non-commercial arts organizations. Content includes philosophy, finances, operations, and promotion. (Discipline: Theatre)

385 - PRODUCTION ANALYSIS
4.00 Credit(s)
The course explores the techniques for the interpreting and staging of dramatic literature by the producer, director, and designers. Content includes the basic concepts of interpretation, theme, style, play analysis, and staging. (Discipline: Theatre)

386 - DIRECTING
4.00 Credit(s)
Methods, theories, exercises, and practices in directing and presenting dramatic scenes. Prerequisite: 4 hours of acting and permission of the instructor. (Discipline: Theatre)
387 - DIRECTING PRACTICUM
1.00 to 4.00 Credit(s)
The actual directing of a main stage or studio production. The student is assigned a departmental advisor for the project. Course may be repeated for a maximum of 8 hours by non-majors for graduation credit, and for a maximum of 12 hours by majors for graduation credit. Prerequisite: COMM 386 and permission of the instructor. (Discipline: Theatre)

390 - SPECIAL TOPICS IN PUBLIC RELATIONS
1.00 to 4.00 Credit(s)

395 - CINEMA
4.00 Credit(s)
An examination of contemporary cinema focusing on influential directors, producers, major critics, and the business of marketing a film. (Discipline: Theatre)

421 - RHETORIC OF POLITICS
4.00 Credit(s)
Rhetorical theory is used to examine and clarify speech and non-speech activities of contemporary political figures from FDR to the present. (Discipline: Speech Communication)

430 - PUBLIC RELATIONS CASE STUDIES
4.00 Credit(s)
An examination of public relations case studies concerning problems in industry, business, education, government, social welfare and trade associations. Prerequisite: COMM 130. (Discipline: Public Relations)

452 - BROADCAST SALES AND PROMOTIONS
4.00 Credit(s)
Introduction to the skills involved in selling broadcast time and station promotion. (Discipline: Telecommunications)

453 - MASS MEDIA AND SOCIETY
4.00 Credit(s)
The legal, ethical, and social responsibilities of journalists and other mass communicators. Prerequisite: COMM 150. (Discipline: Telecommunications)

454 - ADVANCED AUDIO/VIDEO PRODUCTION
4.00 Credit(s)
Individualized training at an advanced level in a particular aspect of audio and/or video production. Prerequisite: COMM 351. (Discipline: Telecommunications)

455 - BROADCAST MANAGEMENT
4.00 Credit(s)
A study of sales, programming, marketing, and management techniques unique to the broadcast medium. Prerequisite: COMM 150. (Discipline: Telecommunications)

490 - SPECIAL TOPICS IN COMMUNICATION ARTS
1.00 to 4.00 Credit(s)

499 - INDEPENDENT STUDY IN COMMUNICATION ARTS
1.00 to 4.00 Credit(s)
Prerequisite: Permission of department.
The professional education unit at Ohio Northern University is the Center for Teacher Education and Certification. The center is the single, unified faculty and administrative unit within the University that is primarily responsible for the preparation of teachers. The director of teacher education and certification, as head of the unit, is delegated the authority and responsibility for the overall administration and operation of the professional education unit.

The teacher education program is designed to provide the prospective teacher with the general education, subject area concentration, and professional education experiences that will enable the student to enter the profession of teaching with competency.

Teaching certificates are issued by the state of Ohio to students who have successfully completed an approved program of teacher preparation and met all requirements prescribed by the State Board of Education. Approved programs and requirements may be obtained in the Center for Teacher Education and Certification.

PLEASE NOTE: All general education, curriculum area, professional education, and admission to teacher education programs requirements listed herein are subject to the approval of the State Board of Education.

Students are required to participate in a minimum of 300 hours of supervised field clinical experience before student teaching. These experiences are included in the required education courses. (Additional information about clinical and field experience is available in the office of the Center for Teacher Education and Certification and from professional education advisors.)

Admission to the Teacher Education Program
Specific requirements may be obtained in the office of the Center for Teacher Education and Certification. The student is responsible for following the program in a timely manner.

Elementary Education (1-8) Certification
General education, curriculum area, and professional education requirements may be obtained in the office of the Center for Teacher Education and Certification. The courses in general education and curriculum area will meet College of Arts and Sciences and state-approved program requirements.

Professional Education Requirements
(\* student must be admitted to the teacher education program)

EDUC 110 Introduction to Education, 2 hrs.
EDUC 120 Multiculturalism/Exceptionalities, 2 hrs.
EDUC 150 Five-Day Field Experience, 0 hrs. (taken twice)
EDUC 225 Child and Adolescent Psychology, 4 hrs.
EDUC 263 Educational Psychology, 4 hrs.
EDUC 320 Educational Technologies, 2 hrs.
Organization and Administration of American Schools, 2 hrs.

EDUC 470  Student Teaching, 15 hrs.

EDUC 475  Student Teaching Seminar, 1 hr.

Plus:
EDUC 195  Orientation, 1 hr.
EDUC 230  Teaching Math in the Elementary School, 4 hrs.
EDUC 310  Integrated Language Arts, 4 hrs.
EDUC 311  Teaching Social Studies in the Elementary School, 4 hrs.
EDUC 312  Whole Language Reading I, 4 hrs.
EDUC 314  Whole Language Reading II, 4 hrs.

Elementary Education with Kindergarten-Primary (K-8) Certification: completion of the elementary education program, plus:
EDUC 240  Introduction to Early Childhood Education, 3 hrs.
EDUC 241  Methods and Materials in Early Childhood Education, 3 hrs.
EDUC 242  Early Childhood Practicum, 3 hrs.

Elementary Education with Reading (K-12) Endorsement: completion of the elementary education program, plus:
EDUC 340  Diagnosis and Correction of Reading Difficulties, 3 hrs.
EDUC 341  Advanced Reading Methods and Materials: Clinical Practice in Remedial Reading, 3 hrs.
EDUC 342  Reading in the Content Area, 4 hrs.

Elementary Education with Specific Learning Disabled Certification (K-12): completion of the elementary education program, plus:
EDUC 210  Introduction to Special Education, 4 hrs.
EDUC 315  Education of Children with Specific Learning Disabilities, 4 hrs.
EDUC 365  Classroom Management of the Exceptional Learner, 4 hrs.
EDUC 421  (337) Diagnostic Assessment and Prescriptive Teaching Techniques for SLD/DH, 6 hrs.
EDUC 422  (339) Reading and Methods in Language Arts for Specific Learning Disabled, 6 hrs.
EDUC 423  (438) Counseling Parents of Handicapped Children, 3 hrs.
EDUC 424  (455) Student Teaching-SLD, 9 hrs.

Numbers listed are University of Findlay courses. Course work will be done at the University of Findlay.

Elementary Education with Driver Education Endorsement: completion of the elementary education program, plus:
EDUC 429  Psychological Factors in Driving, 3 hrs.
EDUC 433  Driver Education, 3 hrs.
EDUC 434  Organization and Administration of Drivers-Traffic Safety, 3 hrs.

Secondary Education (7-12) Certification
Requirements for certification in the various secondary teaching fields may be obtained in the office of the Center for Teacher Education and Certification. Additionally, all students seeking Secondary and All-Grades Certification must complete a minimum four-hour computer science and a minimum four-hour mathematics course.

Secondary Education Certification programs are offered in the following areas:
Biological Science
Bookkeeping/Basic Business
Chemistry
Comprehensive Communications
Computer Science
Drama/Theater
Economics
English
General Science
History
Mathematics
Physical Education
Physics
Political Science
Psychology/Sociology
Sales
Science Comprehensive
Social Studies Comprehensive
Speech/Communication
Technology

Professional Educational Course Requirements:
EDUC 110  Introduction to Education, 2 hrs.
EDUC 120  Multiculturalism/Exceptionalities, 2 hrs.
EDUC 150  Five-Day Field Experience, 0 hrs.
EDUC 225  Child and Adolescent Psychology, 4 hrs.
EDUC 263  Educational Psychology, 4 hrs.
EDUC 320  Educational Technologies, 2 hrs.
EDUC 342  Reading in the Content Area, 4 hrs.
EDUC 440  Classroom Strategies, 4 hrs.
EDUC 445  Organization and Administration of American Schools, 2 hrs.
Specific Methods Courses:
- EDUC 451  Secondary Science Methods, 5 hrs.
- EDUC 452  Secondary English Methods, 4 hrs.
- EDUC 453  Social Studies Methods, 4 hrs.
- EDUC 458  Organization and Methods of Teaching Technology Education, 4 hrs.
- EDUC 461  Physical Education Methods, 4 hrs.
- EDUC 475  Student Teaching Seminar, 1 hr.
- EDUC 480  Student Teaching, 15 hrs.

Secondary Education Certification with Reading (K-12) Endorsement: completion of requirements in a specific teaching field, plus:
- ELED 312  Whole Language Reading I, 4 hrs.
- ELED 314  Whole Language Reading II, 4 hrs.
- EDUC 340  Diagnosis and Correction of Reading Difficulties, 3 hrs.
- EDUC 341  Advanced Reading Methods and Materials: Clinical Practice in Remedial Reading, 3 hrs.

Secondary Education Certification with Driver Education Endorsement: completion of requirements in specific teaching field, plus:
- HPES 219  Psychological Factors in Driving, 3 hrs.
- HPES 433  Driver Education, 3 hrs.
- HPES 434  Organization and Administration of Drivers Traffic Safety, 3 hrs.

All-Grades (K-12) Certification
Requirements for certification in the various All-Grades (K-12) areas may be obtained in the Office of the Center for Teacher Education and Certification. Additionally, all students seeking Secondary and All-Grades certification must complete a minimum four-hour computer science course and a minimum four-hour mathematics course.

ALL-Grades (K-12) Education Certification programs are offered in the following areas:
Art, Visual
Health Education
Languages:
- French
- Spanish
- French/English Dual
Music
Physical Education
Technology

Professional Education course requirements:
- EDUC 110  Introduction to Education, 2 hrs.
- EDUC 120  Multiculturalism/Exceptionalities, 2 hrs.
- EDUC 150  Five-Day Field Experience, 0 hrs. (taken twice)
- EDUC 225  Child and Adolescent Psychology, 4 hrs.
- EDUC 263  Educational Psychology, 4 hrs.
- EDUC 285  Curriculum, 4 hrs.
- EDUC 320  Educational Technologies, 2 hrs.
- EDUC 342  Reading in the Content Area, 4 hrs.
- EDUC 440  Classroom Strategies, 4 hrs.
- EDUC 445  Organization and Administration of American Schools, 2 hrs.

Specific Methods Courses:
- EDUC 304  Technology Education in Elementary Education, 4 hrs.
- EDUC 456  Foreign Language Methods, 4 hrs.
- EDUC 457  Art Methods, 4 hrs.
- EDUC 458  Organization and Methods of Technology Education, 4 hrs.
- EDUC 459  Music Methods, 4 hrs.
- EDUC 460  Health Methods, 4 hrs.
- EDUC 461  Physical Education Methods, 4 hrs.
- EDUC 470  Student Teaching, 7 hrs.
- EDUC 475  Student Teaching Seminar, 1 hr.
- EDUC 480  Student Teaching, 8 hrs.

DEPARTMENT OF EDUCATION

Professors Haynes (Director, CTEC), Miller; Associate Professors Griggs (Chair), Cresser, Roepke; Assistant Professors Berg, Freeman, Romanowski; Lecturer Osborn

Elementary education is a major in the Getty College of Arts and Sciences. The department of education serves a reporting function to the college, acts as a conduit, and functions as a source of curriculum. The chair of the department of education reports to the director of teacher education and certification.

Hence, the elementary education program is located in and administered by the Center for Teacher Education and Certification, a distinct administrative unit within the University.

Admission to the Teacher Education Program: Specific requirements may be obtained in the office of the Center for Teacher Education and Certification.
Elementary Education (1-8) Certification
General education, curriculum area, and cognate area requirements may be obtained in the office of the Center for Teacher Education and Certification. The courses in general education and curriculum area will meet College of Arts and Sciences and state-approved program requirements.

Professional education course requirements:
(• student must be admitted to the teacher education program)

<table>
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Plus:

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<tr>
<td>ELED 195</td>
<td>Orientation, 1 hr.</td>
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<tr>
<td>ELED 230</td>
<td>Teaching Math in the Elementary School, 4 hrs.</td>
</tr>
<tr>
<td>ELED 310</td>
<td>Integrated Language Arts, 4 hrs.</td>
</tr>
<tr>
<td>ELED 311</td>
<td>Teaching Social Studies in the Elementary School, 4 hrs.</td>
</tr>
<tr>
<td>ELED 312</td>
<td>Whole Language Reading I, 4 hrs.</td>
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Elementary Education with Kindergarten-Primary (K-8) Certification: completion of the elementary education program, plus:

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<td>EDUC 240</td>
<td>Introduction to Early Childhood Education, 3 hrs.</td>
</tr>
<tr>
<td>EDUC 241</td>
<td>Methods and Materials in Early Childhood Education, 3 hrs.</td>
</tr>
<tr>
<td>EDUC 242</td>
<td>Early Childhood Practicum, 3 hrs.</td>
</tr>
</tbody>
</table>

Elementary Education with Reading (K-12) Endorsement: completion of the elementary education program, plus:

<table>
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<tbody>
<tr>
<td>EDUC 340</td>
<td>Diagnosis and Correction of Reading Difficulties, 3 hrs.</td>
</tr>
<tr>
<td>EDUC 341</td>
<td>Advanced Reading Methods and Materials: Clinical Practice in Remedial Reading, 3 hrs.</td>
</tr>
<tr>
<td>EDUC 342</td>
<td>Reading in the Content Area, 4 hrs.</td>
</tr>
</tbody>
</table>

Elementary Education with Specific Learning Disabled Certification (K-12): completion of the elementary education program, plus:

<table>
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<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>EDUC 210</td>
<td>Introduction to Special Education, 4 hrs.</td>
</tr>
<tr>
<td>EDUC 315</td>
<td>Education of Children with Specific Learning Disabilities, 4 hrs.</td>
</tr>
<tr>
<td>EDUC 365</td>
<td>Classroom Management of the Exceptional Learner, 4 hrs.</td>
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<tr>
<td>EDUC 421</td>
<td>(337) Diagnostic Assessment and Prescriptive Teaching Techniques for SLD/DH, 6 hrs.</td>
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<td>(455) Student Teaching-SLD, 9 hrs.</td>
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</tbody>
</table>

*Numbers listed are University of Findlay courses. Course work will be done at the University of Findlay.

Elementary Education with Driver Education
Endorsement: completion of the elementary education program, plus:
HPES 219 Psychological Factors in Driving, 3 hrs.
HPES 433 Driver Education, 3 hrs.
HPES 434 Organization and Administration of Drivers-Traffic Safety, 3 hrs.

Requirements for Elementary Education Majors

General Education
English 110, 4 hrs.
English 111, 4 hrs.
English 204, 4 hours
English Literature elective, 4 hrs.
Foreign Language (3 courses) 12 hrs.
Western Civilization 110, 4 hrs.
Western Civilization 111, 4 hrs.
Interpersonal Communication 225, 4 hrs.
Religion, 4 hrs.
Philosophy, 4 hrs.
Psychology 100, 4 hrs.
Math 172 (computer course) 5 hrs.
Math 173, 4 hrs.
Human Geography/Non-Western, 4 hrs.
Physical Education activity courses, 1 hr. (take 3)
Integrated Elementary Science courses: Physics 101, Chemistry 102, Biology 103, (science methods incorporated)

Curriculum
Integrated Fine Arts, 4 hrs.
Art 100, 4 hrs.
Music 100, 4 hrs.
Social Science elective, 4 hrs.
Psychology electives, 8 hrs.
Education 210, 4 hrs.
Education 315, 4 hrs.

120 - MULTICULTURALISM AND EXCEPTIONALITIES
2.00 Credit(s)
Investigation into cultural factors that impact students and curriculum including diverse world views, values, norms, and history of Native American, African American, European American, Hispanic American, and Asian American groups. Study of characteristics, legislation, programs, and strategies for identifying and working with exceptional students in the regular classroom setting.

150 - FIVE-DAY FIELD EXPERIENCE
.00 Credit(s)
Observation and participation with students and teachers in a public school setting for five consecutive school days - minimum of 35 hours. Must be repeated one time. One experience must be in a culturally, racially and socioeconomically diverse setting. Required during freshman or sophomore year of all students seeking teacher certification. Approval of education advisor is required prior to this experience. Graded S/U. Prerequisite: EDUC 110.

190 - SPECIAL TOPICS IN EDUCATION
1.00 to 4.00 Credit(s)

210 - INTRODUCTION TO SPECIAL EDUCATION
4.00 Credit(s)
A course for education and non-education majors. To familiarize students with the varying characteristics and needs of exceptional individuals, their rights under the law and programming alternatives developed to meet their needs. Includes a minimum of 30 hours of field experience. Prerequisite: EDUC 110.

225 - CHILD AND ADOLESCENT PSYCHOLOGY
4.00 Credit(s)
Characteristics of the child and adolescent at different levels of maturity; physical, mental, social and emotional growth; growth and organization of meanings and concepts; controls and factors included in social behavior; personality development. Includes a minimum of 30 hours of field experience.

263 - EDUCATIONAL PSYCHOLOGY
4.00 Credit(s)
The learner, the learning process, and conditions that promote learning. Application of psychological principles to teaching in the classroom. Includes a minimum of 30 hours of clinical experience.

Subject - Education (EDUC)

110 - INTRODUCTION TO EDUCATION
2.00 Credit(s)
An introduction to the philosophical, historical, and sociological aspects of Education. Designed for elementary, secondary, and all-grades teacher education majors. Includes a minimum of 30 hours of field experience. (Thirty hours of clinical/field experience equals one credit hour.)
285 - CURRICULUM
4.00 Credit(s)

290 - SPECIAL TOPICS IN EDUCATION
1.00 to 4.00 Credit(s)

304 - TECHNOLOGY EDUCATION IN THE ELEMENTARY SCHOOL
4.00 Credit(s)
The use of technology and technical activity at the elementary level to assist the children in learning. The use of materials, tools and processes to enhance learning and to assist in developing interests and talents. The rationale, materials, creative and manipulative activities. Typical problems and the planning and organizing of the learning environment. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly TECH 210)

315 - EDUCATION OF CHILDREN WITH LEARNING DISABILITIES
4.00 Credit(s)
The study of the meaning and concepts associated with the field of learning disabilities and the history, definitions, theories, issues, instructional strategies delivery systems and trends in the field. Includes approximately 30 hours of field experience. Prerequisites: EDUC 110 and 210.

320 - EDUCATIONAL TECHNOLOGIES
2.00 Credit(s)
The role that technologies play in our schools of today as well as in American society. Emphasis on instruction, planning, selection, utilization, operation, production, and evaluation of media equipment and materials including motion media, projected visuals, audio media, computers, and multimedia systems. Ten hours of clinical experience will be required. Prerequisite: EDUC 110.

340 - DIAGNOSIS AND CORRECTION OF READING DIFFICULTIES
3.00 Credit(s)
A study of reading difficulties and related causal factors. Investigation and utilization of diagnostic procedures and techniques, including experience in administration and interpretation. Appropriate teaching procedures for remedial reading will be studied. Prerequisites: EDUC 312, 314, and admission to Teacher Education.

341 - ADVANCED READING METHODS AND MATERIALS-CLINICAL
3.00 Credit(s)
Intensive study and discussion of specific areas of interest in reading and practical application of diagnostic techniques and procedures in a clinical field experience situation. Prerequisites: EDUC 312, 314 and 340 and admission to Teacher Education.

342 - READING IN THE CONTENT AREA: SECONDARY EDUCATION
4.00 Credit(s)
Strategies for facilitating student/text interaction in a variety of curricular areas. Emphasis on the following aspects of reading: assessment of student and text; prereading, vocabulary, and comprehension strategies; study skills. Includes 30 hours of field experience. Prerequisite: Admission to Teacher Education.

350 - DEPARTMENTAL FIELD EXPERIENCE
.00 Credit(s)
Individually planned field experience based on an area of certification purposes and objectives and/or student teaching objectives. Specific objectives and experience proposed by student and must be approved by major department and education advisors. Required for students seeking secondary or all-grades certification if 300 hours of field experience is not complete in other professional education courses. Graded S/U. May be repeated once for a total of two hours credit.

365 - CLASSROOM MANAGEMENT OF THE EXCEPTIONAL LEARNER
4.00 Credit(s)
Principles and techniques of behavior shaping are related to classroom structure, managing development of academic skills, and measurement of behavior change. Alternative approaches of behavior management are compared. Principles and approaches will be applied to the challenges of the learning disabled student through class lectures and field experience. Prerequisite: EDUC 210.

390 - SPECIAL TOPICS IN EDUCATION
1.00 to 4.00 Credit(s)

420 - SPECIFIC LEARNING DISABLED: EDUC/PYCH DEVELOP HANDICAPPED
3.00 Credit(s)
Course is provided by arrangement with the University of Findlay. Fall Quarter, at Findlay. Students will register at ONU Fall Quarter of their junior year. Introduction to the understanding and teaching of developmentally handicapped children: etiology, diagnosis, theory and education procedure.
421 - SPECIFIC LEARNING
DISABLED: DIAGNOSTIC ASSESSMENT/TEACHING TECHNIQUES
6.00 Credit(s)
Course provided by arrangement with the University of Findlay Fall Quarter at Findlay. Students will register Fall Quarter at ONU of their senior year. To examine the instruments and procedures the special education teacher uses in diagnostic process, and the development of prescriptions from diagnostic information for specific learning disability and developmentally handicapped children.

422 - SPECIFIC LEARNING
DISABLED: READING/LANGUAGE ARTS METHODS
6.00 Credit(s)
Course is provided by arrangement with the University of Findlay Spring Quarter at Findlay. Students will register Winter Quarter of their junior year. Emphasis on the functional use of oral and written communication skills in conjunction with language arts and skills and on practical applications to everyday living experiences.

423 - COUNSELING PARENTS OF HANDICAPPED/STUDENT TEACHING
3.00 Credit(s)
Courses provided by arrangement with the University of Findlay Spring Quarter at Findlay. Students will register for Winter Quarter at ONU of their senior year. This course is designed to expose the prospective teacher of handicapped students to the purpose, principles and conditions of parent counseling. Both counseling theory and application are used as a basis of the course. (Formerly a combination of EDUC 423 and 424.)

424 - STUDENT TEACHING SLD
9.00 Credit(s)
Planning and teaching under supervision in a specific learning discipline grade. An overall accumulative point average of 2.5 with no grade less than "C" in education or major courses required for certification; a minimum of 300 hours of supervised clinical/field experiences; recommendation of the major department advisor and chairperson professional education advisor and the Director of Teacher Education. (Formerly a combination of EDUC 423 and 424.)

440 - CLASSROOM STRATEGIES
4.00 Credit(s)
Teaching behavior, techniques, methods, and strategies that are required for effective instruction in secondary and all grade classrooms. The course will also focus on other aspects of effective teaching such as positive teacher beliefs, evaluation, and classroom management. Includes 30 hours of field experience. Note: EDUC 440 does not fulfill the methodology requirement for secondary education majors. (Formerly EDUC 450)

445 - ORGANIZATION AND ADMINISTRATION OF SCHOOLS IN AMERICAN SOCIETY
2.00 Credit(s)
Professional issues and orientation to school administrative structure, job search strategies, educational law, educational finance and the politics of education. Prerequisite: Admission to Teacher Education and senior status.

451 - SECONDARY SCIENCE METHODS
5.00 Credit(s)
Methods, strategies and safety considerations for classroom and laboratory instruction in secondary school science. Topics include laboratory planning, laboratory management, laboratory safety, science-technology-society, computer-assisted instruction, materials procurement and materials storage. Thirty hours field experience required. Prerequisite: Admission to Teacher Education.

452 - SECONDARY ENGLISH METHODS
4.00 Credit(s)
Effective methods in teaching grammar, writing, and literature at the high school level. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly ENGL 450)

453 - SOCIAL STUDIES METHODS
4.00 Credit(s)
Effective methods in teaching History, Political Science, Psychology, Sociology, Geography, Economics, and Anthropology. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly HIST 450)

454 - METHODS IN TEACHING SECONDARY SCHOOL MATHEMATICS
4.00 Credit(s)
Methods and current issues in secondary school mathematics teaching including guided discovery, problem solving, diagnosis and remediation, technology, strategies, and teaching aids. This course will not count toward a major in mathematics. The class includes 30 hours of field experience. Prerequisite: Admission to Teacher Education.
456 - FOREIGN LANGUAGE METHODS
4.00 Credit(s)
Theory and practice of current methods for teaching foreign languages in elementary and secondary schools; evaluation of textbooks; use of audio-visual media; methods of evaluating student progress. Includes 30 hours of field experience. Prerequisite: minimum of 18 hours in foreign languages; Admission to the Teacher Education Program. (Formerly AFLN 380)

457 - ART METHODS
4.00 Credit(s)
Effective strategies dealing with materials, techniques and methods of secondary classroom instruction in art. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly ART 457)

458 - ORGANIZATION AND METHODS OF TECHNOLOGY EDUCATION
4.00 Credit(s)
Philosophical constructs, organizing courses, program and course objectives, preparing lesson plans and industrial materials, laboratory procedures, and administrative practices. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly ITEC 473)

459 - MUSIC METHODS
4.00 Credit(s)
Philosophy, techniques, materials, curriculum planning for the music teacher. Includes 30 hours of field experience. Prerequisite: Admission to the Teacher Education Program. (Formerly MUSC 361)

460 - HEALTH METHODS
4.00 Credit(s)
Innovative strategies for the teaching of health education are applied. Attention is given to conceptualizing instruction, specifying instructional objectives, planning units and lessons, utilizing various instructional methods, selecting and using instructional materials, and evaluating teaching effectiveness. Includes 30 hours of field experience; Admission to the Teacher Education Program. (Formerly HPES 350)

461 - PHYSICAL EDUCATION METHODS
4.00 Credit(s)
Methods, devices and techniques which are most effective in teaching the discipline in the public schools. Includes 30 hours of field experience. Prerequisite: One year of physical education for majors; Junior status; and Admission to Teacher Education Program. (Formerly HPES 351)

470 - STUDENT TEACHING IN THE ELEMENTARY SCHOOL
7.00 or 15.00 Credit(s)
Planning and teaching under supervision in the elementary grades; weekly seminar on campus. Prerequisites: An overall accumulative point average of 2.5 with no grade less than "C" in education or major courses required for certification; a minimum of 300 hours of supervised clinical/field experiences; recommendation of the major department advisor and chairperson, professional education advisor, and the Director of Teacher Education. Students seeking all grades (K-12) certification enroll for 7 hours. Students seeking elementary (K-8 or 1-8) certification enroll for 15 hours. Co-requisite: EDUC 475.

475 - STUDENT TEACHING SEMINAR
1.00 Credit(s)
Weekly seminar to be taken concurrently with student teaching. Includes such discussion topics as classroom management, legal aspects, communication with parents, certification, and interviewing techniques, etc. Graded S/U, based upon attendance. Corequisite: EDUC 470 or 480.

480 - STUDENT TEACHING-JUNIOR AND SENIOR HIGH SCHOOL
8.00 or 15.00 Credit(s)
Planning and teaching under supervision in the junior or senior high school, full time, five days per week, in the major teaching field of the student; weekly seminar on campus. Prerequisite: An overall accumulative point average of 2.5 with no grade less than "C" in education or major courses required for certification; a minimum of 300 hours of supervised clinical/field experiences; recommendation of the major department advisor and chairperson, professional education advisor and Director of Teacher Education. Students seeking all grades (K-12) certification enroll for 8 hours. Students seeking elementary (K-8 or 1-8) certification enroll for 15 hours. Co-requisite: EDUC 475.

490 - SPECIAL TOPICS IN EDUCATION
1.00 to 4.00 Credit(s)

497 - INDEPENDENT STUDY IN EDUCATION
1.00 to 3.00 Credit(s)
In areas of student interest with permission of department chairperson.
Subject - Elementary Education
(ELED)

195 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning program of courses and field-based experiences, University catalog, and library. Required of elementary education majors.

200 - CHILD DEVELOPMENT PRACTICUM
1.00 Credit(s)
Assignment as a regular assistant in the Child Development Center. Registration with permission of the department chairperson.

230 - TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL
4.00 Credit(s)
Content, strategies, materials, and evaluation that reflect the current emphasis in mathematics. Includes 30 hours of field experience. (Formerly EDUC 308).

240 - INTRODUCTION TO EARLY CHILDHOOD EDUCATION
3.00 Credit(s)
History, philosophy and current developments in the field of early childhood education. Discussion of Montessori, Piaget, Headstart, Day Care, Nursery School, and Kindergarten Education. Introduction to the field of early childhood education. Prerequisite: EDUC 110.

241 - METHODS & MATERIALS IN EARLY CHILDHOOD EDUCATION
3.00 Credit(s)
Curriculum planning and organization, teaching processes, development of materials for early childhood settings. Prerequisite: ELED 240.

242 - EARLY CHILDHOOD PRACTICUM
3.00 Credit(s)
Sixty hours of field experience in an early childhood setting, plus seminars. One credit hour equals 30 hours of field experience. Prerequisites: ELED 240 and 241.

310 - INTEGRATED LANGUAGE ARTS
4.00 Credit(s)
An integrated or whole language approach is taken in this course and is based on cognitive, developmental, and psycholinguistic theories about how children learn. Knowledge and appreciation of children’s books, teaching of creative writing. Encompasses strategies showing how to integrate all of the language arts with an emphasis on children’s literature. Includes 30 hours of field experience. Prerequisite: Admission to Teacher Education Program. (Formerly EDUC 245.)

311 - TEACHING SOCIAL STUDIES IN ELEMENTARY SCHOOL
4.00 Credit(s)
Objectives, trends, issues, and evaluation of the teaching of social studies in elementary school. Includes the preparation of units and organization of learning activities for problem solving. Requires 30 hours of field experience (10 hours of clinical experience). Prerequisite: Admission to Teacher Education. (Formerly EDUC 306)

312 - WHOLE LANGUAGE READING 1
4.00 Credit(s)
Introduction to reading. Emphasis will be placed on how to teach phonics, whole language, emerging literacy, word recognition skills, cooperative learning and communication skills including listening and speaking. Includes 30 hours of field experience (including 7 clinical hours.) Prerequisite: EDUC 310 and admission to Teacher Education Program. (Formerly EDUC 310)

314 - WHOLE LANGUAGE READING 2
4.00 Credit(s)
Principles and methods of teaching reading including whole language, phonics, creative writing, diagnostic skills and preparation and evaluation of reading materials. Includes 30 hours of field experience (including 6 hours clinical). Prerequisite: Admission to Teacher Education Program and EDUC 312. (Formerly 314)
The major in English/Literature (45 hours) requires the following courses: 311 or 312, 351, 384, 410, 483, 484, 485, five courses in five of the core distribution areas, and two English electives. Also required is Foreign Language 214, 224, 244, 250 or 264, or two philosophy courses above the 100 level.

A major in English/Writing (48 hours) requires the following courses: 250 (taken 3 times), 351, 384, 483, 484, 485, three journalism and/or upper-level writing courses and six courses from five of the core distribution areas.

A major in English for Secondary School Education Certification (45 hours) requires the following courses: 225, 311 or 312, 343 or 347, 351, 384, 410, 483, 484, 485, and five courses in five of the core distribution areas.

All English majors must take at least half of their required courses in English (excluding general education English courses) at the 300 or 400 level. Senior English majors may take 200-level English courses only with permission from the chair.

Before graduation, English majors must demonstrate proficiency on the word processor in order to meet the college requirement for computer literacy.

The minor in Literature (32 hours) requires the following courses: 311 or 312, 351, five courses in five of the core distribution areas, and one elective in literature or writing.

The minor in Writing (31-32 hours) requires the following courses: 250 taken 3 times or an elective in upper-level writing, 351, two journalism and/or upper-level writing courses, and four courses in five of the core distribution areas.

English 110, 111, 204 do not count toward any major or minor in the Department of English, nor does any course with a grade below "C."

Business Option for English Majors

A student wishing an option in business with a major in English must complete a 32-hour program in the College of Business Administration: Accounting 211, 212, Business Law 312, Economics 202, 203, Management 330, Marketing 351, Finance 362. Mathematics 142 is strongly recommended.
Subject - English (ENGL)

001 - ENRICHMENT
0.00 Credit(s)
Enrichment of the curriculum for English majors through compulsory attendance at designated cultural and academic extracurricular events. Must be taken twice each academic year by all English majors.

110 - WRITING 1
4.00 Credit(s)
Beginning writing. Emphasis throughout the course on the development of writing skills, based on the principles of critical thinking. Prerequisite for all 200-level courses except for students specifically exempted from the course.

111 - WRITING 2
4.00 Credit(s)
Continuation of ENGL 110. Prerequisite for ENGL 204.

151 - COLLEGE COMPOSITION 1
4.00 Credit(s)
Communication skills for non-native speakers of English with emphasis on reading and writing in a cultural context. ENGL 151 may be substituted for ENGL 110.

152 - COLLEGE COMPOSITION 2
4.00 Credit(s)
Continuation of ENGL 151. ENGL 152 and 153 together may be substituted for ENGL 111.

153 - COLLEGE COMPOSITION 3
4.00 Credit(s)
Continuation of ENGL 152. ENGL 152 and 153 together may be substituted for ENGL 111. Prerequisites: ENGL 151 or 110 and 152.

190-SPECIAL TOPICS IN ENGLISH
4.00 Credit(s)
Writing workshop. Usually the student whose English ACT is less than 16 should expect to take this course. Offered FALL 1994. CREDIT EARNED IN THIS COURSE DOES NOT SATISFY GRADUATION REQUIREMENTS FOR ANY PROGRAM OFFERED AT THE UNIVERSITY.

195 - PROSEMINAR IN ENGLISH
1.00 Credit(s)
Orientation to the College of Arts and Sciences and to the Department of English. Required of all freshmen and transfer majors in the fall quarter who do not take AASG 100, Freshman Seminar. Counts as Arts and Sciences orientation requirement.

201 - BRITISH LITERATURE TO 1660
4.00 Credit(s)
A survey of Anglo-Saxon, Medieval, and Renaissance literature.

202 - BRITISH LITERATURE 1660-1830
4.00 Credit(s)
A survey of Restoration, Neo-Classic, and Romantic literature.

203 - BRITISH LITERATURE AFTER 1830
4.00 Credit(s)
A survey of Victorian and Modern literature.

204 - GREAT WORKS
4.00 Credit(s)
A study in depth of a small number of important literary texts. Not open to Freshmen.

207 - MODERN POETRY
4.00 Credit(s)
A study of modern English and American poets with emphasis on one or two major figures such as Yeats and Frost.

208 - MODERN WORLD DRAMA
4.00 Credit(s)
A study of modern drama, concentrating on major works and playwrights, including influences, movements and types.

209 - MODERN FICTION
4.00 Credit(s)
A study of selected works of modern fiction, including influences, movements and types.

211 - AMERICAN LITERATURE TO 1865
4.00 Credit(s)
A survey of Colonial and Romantic literature.

212 - AMERICAN LITERATURE AFTER 1865
4.00 Credit(s)
A survey of Modern literature.

221 - WORLD LITERATURE 1
4.00 Credit(s)
Major literary masterpieces of the ancient and medieval periods.

222 - WORLD LITERATURE 2
4.00 Credit(s)
Major literary masterpieces from the Renaissance to the mid-nineteenth century.

223 - WORLD LITERATURE 3
4.00 Credit(s)
Major literary masterpieces from the mid-nineteenth century to the present.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>225</td>
<td>APPROACHES TO CHILDREN’S LITERATURE</td>
<td>4.00</td>
<td></td>
<td>Knowledge and appreciation of literature specifically suited for children and adolescents. The readings selected from various genres will be studied using the same critical approaches that are traditionally used to analyze literature for adults. Open only to majors in English and elementary education.</td>
</tr>
<tr>
<td>241</td>
<td>NEWSWRITING 1</td>
<td>4.00</td>
<td>ENGL 110 and 111</td>
<td>The fundamentals of gathering information and writing for a newspaper. Prerequisites: ENGL 110 and 111.</td>
</tr>
<tr>
<td>242</td>
<td>NEWSWRITING 2</td>
<td>4.00</td>
<td>ENGL 110, 111 and 241</td>
<td>An advanced course in gathering information and writing for a newspaper. Prerequisites: ENGL 110, 111 and 241.</td>
</tr>
<tr>
<td>243</td>
<td>MAGAZINE WRITING</td>
<td>4.00</td>
<td>ENGL 111</td>
<td>The discipline and technique of writing articles for magazines. Prerequisite: ENGL 111.</td>
</tr>
<tr>
<td>244</td>
<td>PRESS/FREEDOM-LAW</td>
<td>4.00</td>
<td></td>
<td>A survey of press freedom and law in the United States, including recent developments within the collegiate press.</td>
</tr>
<tr>
<td>246</td>
<td>JOURNALISM LAYOUT AND DESIGN</td>
<td>4.00</td>
<td></td>
<td>The theory and technique of layout and design of newspapers and magazines.</td>
</tr>
<tr>
<td>250</td>
<td>JOURNALISM ACTIVITIES-NEWSPAPER</td>
<td>1.00</td>
<td></td>
<td>Journalism activities include supervised work on and contributions to the publications. A student may enroll for only one activities course per quarter. Six hours in one area or a combination of six hours from four areas (250, 251, 252, 253) may be counted toward graduation, but only the required three credit hours of Jour</td>
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<tr>
<td>251</td>
<td>JOURNALISM ACTIVITIES-MAGAZINE</td>
<td>1.00</td>
<td></td>
<td>Graded S/U.</td>
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<tr>
<td>253</td>
<td>JOURNALISM ACTIVITIES-INTERNSHIP</td>
<td>1.00</td>
<td></td>
<td>Supervised work on and contributions to the publications. Graded S/U.</td>
</tr>
<tr>
<td>254</td>
<td>JOURNALISM ACTIVITIES-HIGH SCHOOL PUBLICATIONS</td>
<td>1.00</td>
<td>ENGL 110, and either ENGL 241, 244 or 246.</td>
<td>Students work on high school publications in an area high school under the supervision of a high school teacher and a faculty member of the English Department. Prerequisites: ENGL 110, and either ENGL 241, 244 or 246. Graded S/U.</td>
</tr>
<tr>
<td>290</td>
<td>SPECIAL TOPICS IN ENGLISH</td>
<td>1.00 to 4.00</td>
<td>ENGL 110.</td>
<td></td>
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<tr>
<td>291</td>
<td>SPECIAL TOPICS IN WORLD LITERATURE</td>
<td>1.00 to 4.00</td>
<td>ENGL 110.</td>
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<tr>
<td>292</td>
<td>SPECIAL TOPICS IN BRITISH LITERATURE</td>
<td>1.00 to 4.00</td>
<td>ENGL 110.</td>
<td></td>
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<tr>
<td>293</td>
<td>SPECIAL TOPICS IN AMERICAN LITERATURE</td>
<td>1.00 to 4.00</td>
<td>ENGL 110.</td>
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<tr>
<td>297</td>
<td>INDEPENDENT STUDY IN ENGLISH</td>
<td>1.00 to 3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>BRITISH LITERATURE BEFORE 1500</td>
<td>4.00</td>
<td></td>
<td>A study of the epic, lyric poetry and drama forming the background for later English literature: “Beowulf,” the King Arthur tales, Irish and Welsh poetry and myths, the romance, and early forms of drama. Prerequisite: Two 200- level literature courses.</td>
</tr>
<tr>
<td>311</td>
<td>SHAKESPEARE 1</td>
<td>4.00</td>
<td></td>
<td>Representative plays and poems. Prerequisite: Two 200-level literature courses.</td>
</tr>
</tbody>
</table>
312 - SHAKESPEARE 2
4.00 Credit(s)
Representative plays and poems not covered in 311. May be taken separately from ENGL 311. Prerequisite: Two 200-level literature courses.

319 - RENAISSANCE LITERATURE
4.00 Credit(s)
A concentrated study of two or three major writers, movements, or genres of the period 1485-1660. Shakespeare is generally excluded. Prerequisite: Two 200-level literature courses.

322 - RESTORATION AND THE EIGHTEENTH CENTURY
4.00 Credit(s)
A concentrated study of two or three major writers, movements, or genres in the Neo-Classic period. Prerequisite: Two 200-level literature courses.

323 - BRITISH ROMANTICISM
4.00 Credit(s)
A concentrated study of two or three major writers. Prerequisite: Two 200-level literature courses.

324 - VICTORIAN PERIOD
4.00 Credit(s)
A concentrated study of two or three major writers, movements, or genres. Prerequisite: Two 200-level literature courses.

326 - TWENTIETH-CENTURY BRITISH LITERATURE
4.00 Credit(s)
A concentrated study of two or three major writers, movements, or genres. Prerequisite: Two 200-level literature courses.

334 - MAJOR AMERICAN WRITERS OF THE NINETEENTH CENTURY
4.00 Credit(s)
A concentrated study of selected nineteenth-century writers. Prerequisite: Two 200-level literature courses.

335 - MAJOR AMERICAN WRITERS OF THE TWENTIETH CENTURY
4.00 Credit(s)
A concentrated study of selected twentieth-century writers. Prerequisite: Two 200-level literature courses.

341 - POETRY WRITING
4.00 Credit(s)
The discipline and technique of writing poetry. Graded S/U. May be continued as ENGL 498 (independent study in writing). Prerequisite: ENGL 110, 111, 204.

342 - FICTION WRITING
4.00 Credit(s)
The discipline and technique of writing fiction. Graded S/U. May be continued as ENGL 498 (independent study in writing). Prerequisite: ENGL 100, 111, 204.

343 - PERSUASIVE WRITING
4.00 Credit(s)
An advanced writing course stressing the art of persuasive prose in letters, reports and critiques. Prerequisite: ENGL 110, 111, 204.

346 - PRELAW WRITING
4.00 Credit(s)
Clear analysis and direct communication of facts and ideas according to the mode of legal writing. Prerequisite: ENGL 110, 111, 204.

347 - ADVANCED WRITING
4.00 Credit(s)
An advanced writing course tailored to fit the specific needs of students in various disciplines, including scholarly research, business letters, scientific reports, abstracts, memoranda and writing for the general public. Prerequisite: ENGL 110, 111, 204.

351 - THE ENGLISH LANGUAGE
4.00 Credit(s)
An introduction to the study of linguistics with the emphasis on a description of the structure of English grammar. Prerequisite: Two 200-level literature courses.

364 - THE BRITISH NOVEL
4.00 Credit(s)
Representative novels from the eighteenth century to the present. Prerequisite: Two 200-level literature courses.

365 - THE AMERICAN NOVEL
4.00 Credit(s)
Representative novels from the nineteenth century to the present. Prerequisite: Two 200-level literature courses.

370 - AFRICAN LITERATURE
4.00 Credit(s)
Novels and short stories that reflect African imagination, mentality and ethnic life in colonial and post-independence periods. This course satisfies the general education requirement for non-Western culture. Prerequisite: Two 200-level literature courses.
381 - LITERARY CRITICISM
4.00 Credit(s)
A study of major theories and their practical applications. Prerequisite: Two 200-level literature courses.

384 - DIRECTED READING
1.00 Credit(s)
Independent reading and tutorial under the supervision of an instructor. Open only to juniors who are English majors or minors. Prerequisite: 300-level course. Graded S/U.

390 - SPECIAL TOPICS IN ENGLISH
1.00 to 4.00 Credit(s)

410 - CHAUCER
4.00 Credit(s)
A study of Chaucer with special emphasis on "The Canterbury Tales", some reading of the chief literary forms of the Middle Ages, some skill in understanding and reading Middle English. Prerequisite: Two 200-level literature courses.

420 - DEPARTMENT NEWSLETTER
2.00 Credit(s)
Write and lay out the annual department newsletter.

481 - INTERNSHIP
1.00 to 15.00 Credit(s)
Internships in English are designed to provide practical experience outside the classroom and to enhance the student's professional interests. Prerequisite: Courses appropriate for the internship. Graded S/U.

483 - READING FOR THE SENIOR ESSAY
1.00 Credit(s)
Independent reading in preparation for the senior essay. Prerequisite: ENGL 384. Graded S/U.

484 - SENIOR ESSAY 1
1.00 Credit(s)
Writing of a rough draft of the Senior Essay. Prerequisite: ENGL 483.

485 - SENIOR ESSAY 2
2.00 Credit(s)
Final draft and oral presentation of the Senior Essay. Prerequisite: ENGL 484.

490 - SPECIAL TOPICS IN ENGLISH
1.00 to 4.00 Credit(s)
Prerequisite: 300-level course.

497 - INDEPENDENT STUDY IN LITERATURE
1.00 to 3.00 Credit(s)

498 - INDEPENDENT STUDY IN WRITING
1.00 to 3.00 Credit(s)

499 - INDEPENDENT STUDY IN JOURNALISM
1.00 to 3.00 Credit(s)

DEPARTMENT OF FOREIGN LANGUAGES

Associate Professor Dickson (Chair); Professors Davey, Lippert; Associate Professor Dufault; Assistant Professor Walter; Lecturers Berg, Liechty.

The foreign language program is designed to train students to speak, understand, read, and write a foreign language; to ensure a strong background in the culture and literature of peoples whose language they are studying; to provide the language ability necessary for students to work in a number of fields; to prepare students for graduate work; to train students to be teachers of foreign languages at the elementary and secondary levels.

The University Audio Center provides the student with opportunities for language practice and extends his/her contact with the living language. Audio and video materials are used as an adjunct to class work and coordinated with class instruction to give students ample opportunity for aural comprehension, audio-visual drill, speaking, and self-correction.

Requirements for a non-teacher certification major in French or Spanish: 52 hours are required beginning with French 120 or Spanish 140; to include eight hours of civilization courses to be selected from among the following: 324, 327, 328, 329 (French) or 351, 353, 354, 356, 357, 358 (Spanish). Students develop individual programs of study with advisers. Ordinarily courses are taken in sequence through French 312 or Spanish 342. Civilization courses assume completion of French 216 or Spanish 246. Unless otherwise indicated, other courses at the 300- and 400-level assume completion of French 312 or Spanish 342.

Requirements for a teacher-certification (Ohio) major in French or Spanish: 68 hours are required beginning with French 120 or Spanish 140; to include eight hours of civilization courses to be selected from those listed in the previous paragraph; eight hours of literature courses are also required. Students develop individual programs of study with advisers. Ordinarily courses are taken in sequence through French 312 or Spanish 342. Civilization courses assume completion of French 216 or Spanish 246. Unless otherwise indicated, other courses at the 300- and 400-level assume completion of French 312 or Spanish 342.

It is strongly recommended, although not required, that language majors take part in summer-study abroad or junior-year abroad programs. Faculty advisers assist students in
developing these programs of study. Language majors are also encouraged to develop a second academic area of interest in addition to their language major.

For a minor in French, German or Spanish: 36 hours are required beginning with FREN 120, German 130, or Spanish 140. Individual programs are devised for students, but emphasis is on language and civilization.

Business Option for Spanish/French Majors
A student wishing a major in French or Spanish with an option in business must complete a 32-hour program in the College of Business Administration.

Business Option
Accounting 211
Accounting 212
Economics 202
Economics 203
Marketing 351
Managerial Finance 362
Management 330
Business Law 312

Subject - General Foreign Languages (AFLN)

403 - LITERATURE IN TRANSLATION
4.00 Credit(s)
One-quarter course in either Spanish, French or German literature in translation. Focus on major writers and literary trends of different periods. Lectures and assignments in English. Does not fulfill the General Education requirement in Foreign Language.

Subject - French (FREN)

120 - ELEMENTARY FRENCH 1
4.00 Credit(s)
Basic proficiency in understanding, speaking, reading and writing French in everyday situations. Emphasis on comprehension and speaking. Video, slides, music and other authentic materials illustrate French and francophone ways of life. Four classes per week.

121 - ELEMENTARY FRENCH 2
4.00 Credit(s)
Continuation of FREN 120. Four classes per week. Prerequisite: FREN 120 or proficiency established by placement test.

122 - ELEMENTARY FRENCH 3
4.00 Credit(s)
Continuation of FREN 121. Four classes per week. Prerequisite: FREN 121 or proficiency established by placement test.

214 - INTERMEDIATE FRENCH 1
4.00 Credit(s)
Continued development of proficiency in understanding, speaking, reading and writing French. Emphasis on high-frequency vocabulary and grammatical structures as well as phonetics. Video, slides, music and other authentic materials illustrate language usage and cultural contexts. Four classes per week. Prerequisite: FREN 122 or proficiency established by placement test.

215 - INTERMEDIATE FRENCH 2
4.00 Credit(s)
Continuation of FREN 214. Prerequisite: FREN 214 or proficiency established by placement test.

216 - INTERMEDIATE FRENCH 3
4.00 Credit(s)
Continuation of FREN 215. Prerequisite: FREN 215 or proficiency established by placement test.

219 - INTRODUCTION TO FRENCH LITERATURE
4.00 Credit(s)
Basic principles of analyzing and appreciating French poetry, prose and theatre. Reading and discussion in French of representative texts. Four classes per week. Prerequisite: FREN 216 and permission of the department.

297 - INDEPENDENT STUDY IN FRENCH
1.00 to 4.00 Credit(s)
May be repeated as topic varies.

311 - FRENCH CONVERSATION AND COMPOSITION
4.00 Credit(s)
Development of greater proficiency in using vocabulary and grammatical structures through intensive oral and written practice. Four classes per week. Prerequisite: FREN 216 and permission of the department.
312 - ADVANCED FRENCH LANGUAGE STUDY
4.00 Credit(s)
Intensive study of grammar and syntax emphasizing high-frequency constructions. Four classes per week. Prerequisite: FREN 311 and permission of the department.

313 - BUSINESS FRENCH
4.00 Credit(s)
Development of oral and written proficiency within a business context. Business vocabulary, readings, business and cultural concepts, and situational practice. Course assumes mastery of basic French grammar and vocabulary. Prerequisite: FREN 312 and permission of the department.

315 - THE FRENCH TEXT: THE NOVEL
4.00 Credit(s)
Reading and discussion in French of representative works in their historical and cultural context. Four classes per week. Prerequisite: FREN 312 and permission of the department.

316 - THE FRENCH TEXT: THE ESSAY AND NON-LITERARY TEXTS
4.00 Credit(s)
Reading and discussion in French of representative classic authors and texts from contemporary French periodicals. Four classes per week. Prerequisite: FREN 312 and permission of the department.

319 - FRENCH POETRY AND SONG
4.00 Credit(s)
Discussion and analysis in French of representative French and francophone works in their historical and cultural contexts. Rules of French versification. Interpretations of poetry into song. Classic and contemporary “chansonniers”. Four classes per week. Prerequisite: FREN 312 and permission of the department.

324 - THE FRENCH FILM
4.00 Credit(s)
Viewing of representative films and discussion in French of well-known directors and actors, from the origins of French cinema to the present. Four classes per week. Prerequisite: FREN 312 and permission of the department.

327 - FRENCH CIVILIZATION: CONTEMPORARY FRANCE
4.00 Credit(s)
Discussion in French of twentieth century French culture with emphasis on the family, education, employment, politics, technology and cultural values based on videos, readings and other authentic materials. Four classes per week. Prerequisite: FREN 312 and permission of the department.

328 - FRENCH CIVILIZATION: HISTORY OF FRANCE
4.00 Credit(s)
Discussion in French of the history, political institutions and artistic expressions of France from their origins to the twentieth century. Films, slides and appropriate texts enhance historical perspectives and emphasize cultural values. Four classes per week. Prerequisite: FREN 312 and permission of the department.

329 - FRENCH CIVILIZATION: FRANCOPHONE CULTURES
4.00 Credit(s)
Discussion in French of francophone cultures, emphasizing Quebec and West Africa, in terms of historical perspectives and contemporary concerns. Video, films, slides and appropriate texts illustrate cultural values and provide the basis for discussion. Four classes per week. Prerequisite: FREN 312 and permission of the department. Note: This course fulfills the Non-Western studies requirement.

390 - SPECIAL TOPICS IN FRENCH
1.00 to 4.00 Credit(s)
May be repeated as topic varies. Prerequisite: FREN 312 and permission of the department.

416 - THE FRENCH THEATRE
4.00 Credit(s)
Reading and discussion in French of representative works from the 17th century to the present. Recordings, films, and actual performances enhance discussions as available and appropriate. Four classes per week. Prerequisite: FREN 312 and permission of the department.

418 - FRANCOPHONE LITERATURE OF THE TWENTIETH CENTURY
4.00 Credit(s)
Reading and discussion in French of works by contemporary writers in a variety of French-speaking countries. Four classes per week. Prerequisite: FREN 312 and permission of the department. Note: This course fulfills the Non-Western studies requirement.

497 - INDEPENDENT STUDY IN FRENCH
1.00 to 4.00 Credit(s)
May be repeated as topic varies.
Subject - German (GRMN)

130 - ELEMENTARY GERMAN 1
4.00 Credit(s)
Basic proficiency in understanding, speaking, reading and writing German in everyday situations. Emphasis on comprehension and speaking. Videos, slides, music and other authentic materials illustrate life in Germany and Austria. Four classes per week.

131 - ELEMENTARY GERMAN 2
4.00 Credit(s)
Continuation of GRMN 130. Four classes per week. Prerequisite: GRMN 130 or proficiency established by placement test.

132 - ELEMENTARY GERMAN 3
4.00 Credit(s)
Continuation of GRMN 131. Four classes per week. Prerequisite: GRMN 131 or proficiency established by placement test.

224 - INTERMEDIATE GERMAN 1
4.00 Credit(s)
Continued development of proficiency in understanding, speaking, reading and writing German. Emphasis on high-frequency vocabulary and grammatical structures, short writing assignments. Authentic materials and videos illustrate language usage and cultural context. Four classes per week. Prerequisite: GRMN 132 or proficiency established by placement test.

225 - INTERMEDIATE GERMAN 2
4.00 Credit(s)
Continuation of GRMN 224. Four classes per week. Prerequisite: GRMN 224 or proficiency established by placement test.

226 - INTERMEDIATE GERMAN 3
4.00 Credit(s)
Continuation of GRMN 225. Four classes per week. Prerequisite: GRMN 225 or proficiency established by placement test.

261 - INTRODUCTION TO GERMAN LITERATURE
4.00 Credit(s)
Basic principles of analyzing and appreciating German essays, short stories, poetry, plays, novellas. Vocabulary building. Reading and discussions in German. Four classes per week. Prerequisite: GRMN 226 and permission of the department.

298 - INDEPENDENT STUDY IN GERMAN
1.00 to 4.00 Credit(s)
May be repeated as topic varies.

322 - GERMAN CONVERSATION AND COMPOSITION
4.00 Credit(s)
Intensive study of grammar and syntax emphasizing high-frequency constructions. Four classes per week. Prerequisite: GRMN 226 and permission of the department.

323 - ADVANCED GERMAN LANGUAGE AND COMPOSITION
4.00 Credit(s)
Advanced grammar and syntax with emphasis on constructions of high-frequency usage and written compositions. Prerequisite: GRMN 226 or permission of the department.

336 - BUSINESS GERMAN
4.00 Credit(s)
Vocabulary and language structures pertaining to business culture in Germany. Letter and resume writing. Video and authentic materials. Four classes per week. Prerequisite: GRMN 226 and permission of the department.

337 - GERMAN CIVILIZATION
4.00 Credit(s)
Geographical, political, economic, social and cultural forces in German-speaking Central Europe from the 5th century AD to the present. Discussion in German. Four classes per week. Prerequisite: GRMN 226 and permission of the department.

338 - CONTEMPORARY GERMANY AND AUSTRIA
4.00 Credit(s)
German and Austrian culture since the First World War with emphasis on family, education, employment, politics, technology, and social values based on readings, videos and other materials. Discussion in German. Four classes per week. Prerequisite: GRMN 226 and permission of the department.

361 - GERMAN LITERATURE
4.00 Credit(s)
Readings and discussion in German of drama, the Novelle, poetry, the short story. Four classes per week. Prerequisite: GRMN 261 and permission of department.

391 - SPECIAL TOPICS IN GERMAN
1.00 to 4.00 Credit(s)
May be repeated as topic varies. Prerequisite: GRMN 226 and permission of the department.

498 - INDEPENDENT STUDY IN GERMAN
1.00 to 4.00 Credit(s)
May be repeated as topic varies.
### Subject - Japanese (JAPN)

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<th>Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite</th>
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<tr>
<td>161</td>
<td>ELEMENTARY JAPANESE 1</td>
<td>4.00</td>
<td>Introduction to basic sound systems, sentence structure and Hiragana and Katakana syllabary. Emphasis on listening, speaking and pronunciation. Video, cassette tapes and interaction with native speakers will supplement language and cultural understanding. Four classes per week.</td>
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<tr>
<td>162</td>
<td>ELEMENTARY JAPANESE 2</td>
<td>4.00</td>
<td>Continuation of JAPN 161. Four classes per week. Prerequisite: JAPN 161 or permission of the department.</td>
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<tr>
<td>163</td>
<td>ELEMENTARY JAPANESE 3</td>
<td>4.00</td>
<td>Continuation of JAPN 162. Four classes per week. Prerequisite: JAPN 162 or permission of the department.</td>
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<tr>
<td>264</td>
<td>INTERMEDIATE JAPANESE 1</td>
<td>4.00</td>
<td>Continued development of proficiency in understanding, speaking, reading and writing Japanese with emphasis on pronunciation and speaking. Chinese character reading and writing will be introduced. Four classes per week. Prerequisite: JAPN 163 or permission of the department.</td>
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<tr>
<td>265</td>
<td>INTERMEDIATE JAPANESE 2</td>
<td>4.00</td>
<td>Continuation of JAPN 264. Four classes per week. Prerequisite: JAPN 264 or permission of the department.</td>
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<tr>
<td>266</td>
<td>INTERMEDIATE JAPANESE 3</td>
<td>4.00</td>
<td>Continuation of JAPN 265. Four classes per week. Prerequisite: JAPN 265 and permission of the department.</td>
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<tr>
<td>295</td>
<td>INDEPENDENT STUDY IN JAPANESE</td>
<td>1.00-4.00</td>
<td>May be repeated as topic varies.</td>
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### Subject - Russian (RUSS)

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<tr>
<td>150</td>
<td>ELEMENTARY RUSSIAN 1</td>
<td>4.00</td>
<td>Basic proficiency in understanding, speaking, reading and writing Russian in everyday situations. Emphasis on comprehension and speaking. Authentic materials illustrate life in Russia and the former Soviet Union. Four classes per week.</td>
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<tr>
<td>151</td>
<td>ELEMENTARY RUSSIAN 2</td>
<td>4.00</td>
<td>Continuation of RUSS 150. Four classes per week. Prerequisite: RUSS 150 and permission of the department.</td>
<td></td>
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<tr>
<td>152</td>
<td>ELEMENTARY RUSSIAN 3</td>
<td>4.00</td>
<td>Continuation of RUSS 151. Four classes per week. Prerequisite: RUSS 151 and permission of the department.</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>INTERMEDIATE RUSSIAN 1</td>
<td>4.00</td>
<td>Continued development of proficiency in understanding, speaking, reading and writing Russian. Emphasis on high-frequency vocabulary and grammatical structures, short writing assignments. Authentic materials and videos illustrate language usage and cultural context. Four classes per week. Prerequisite: RUSS 152 and permission of the department.</td>
<td></td>
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<tr>
<td>251</td>
<td>INTERMEDIATE RUSSIAN 2</td>
<td>4.00</td>
<td>Continuation of RUSS 250. Four classes per week. Prerequisite: RUSS 250 and permission of the department.</td>
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<tr>
<td>252</td>
<td>INTERMEDIATE RUSSIAN 3</td>
<td>4.00</td>
<td>Continuation of RUSS 251. Four classes per week. Prerequisite: RUSS 251 and permission of the department.</td>
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<tr>
<td>296</td>
<td>INDEPENDENT STUDY IN RUSSIAN</td>
<td>1.00-4.00</td>
<td>May be repeated as topic varies. Prerequisite: RUSS 152 and permission of the department.</td>
<td></td>
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</tbody>
</table>
140 - ELEMENTARY SPANISH 1
4.00 Credit(s)
Basic proficiency in understanding, speaking, reading, and writing Spanish with emphasis on listening, speaking, and pronunciation. Videos, slides, music and other authentic materials illustrate Hispanic way of life. Four classes per week.

141 - ELEMENTARY SPANISH 2
4.00 Credit(s)
Continuation of SPAN 140. Four classes per week. Prerequisite: SPAN 140 or proficiency established by placement test.

142 - ELEMENTARY SPANISH 3
4.00 Credit(s)
Continuation of SPAN 141. Four classes per week. Prerequisite: SPAN 141 or proficiency established by placement test.

244 - INTERMEDIATE SPANISH 1
4.00 Credit(s)
Continued development of proficiency in understanding, speaking, reading and writing Spanish with emphasis on pronunciation and speaking. Four classes per week. Prerequisite: SPAN 142 or proficiency established by placement test.

245 - INTERMEDIATE SPANISH 2
4.00 Credit(s)
Continuation of SPAN 244. Four classes per week. Prerequisite: SPAN 244 or proficiency established by placement test.

246 - INTERMEDIATE SPANISH 3
4.00 Credit(s)
Continuation of SPAN 245. Four classes per week. Prerequisite: SPAN 245 or proficiency established by placement test.

247 - INTRODUCTION TO HISPANIC LITERATURE
4.00 Credit(s)
Critical principles in the assessment of prose, fiction, poetry and drama as applied to selected readings in Spanish and Latin American literature. Prerequisite: SPAN 246 and permission of the department.

299 - INDEPENDENT STUDY IN SPANISH
1.00 to 4.00 Credit(s)
May be repeated as topic varies.

341 - SPANISH CONVERSATION AND COMPOSITION
4.00 Credit(s)
Development of greater proficiency in using vocabulary and grammatical structures through intensive oral and written practice. Prerequisite: SPAN 246 and permission of the department.

342 - ADVANCED SPANISH LANGUAGE STUDY
4.00 Credit(s)
Intensive study of grammar and syntax emphasizing high-frequency constructions. Prerequisite: SPAN 341 and permission of the department.

343 - BUSINESS SPANISH
4.00 Credit(s)
Development of oral and written proficiency within a business context. Business vocabulary, readings, business and cultural concepts, situational practice and case studies. Course assumes mastery of basic Spanish grammar and vocabulary. Prerequisite: SPAN 342 and permission of the department.

351 - HISPANIC CULTURAL PERSPECTIVES
4.00 Credit(s)
Contrasts Hispanic and American world views with emphasis on social attitudes and life styles. Prerequisite: SPAN 342 and permission of the department. Note: This course fulfills the Non-Western studies requirement.

353 - SPANISH CIVILIZATION
4.00 Credit(s)
Geographical, political, economic, social and cultural forces in Spain from prehistoric times to the present. Prerequisite: SPAN 342 and permission of the department. Note: This course fulfills the Non-Western studies requirement.

354 - LATIN AMERICAN CIVILIZATION
4.00 Credit(s)
Geography, history and culture of Latin America from Mezoamerica to the present. Prerequisite: SPAN 342 and permission of the department. Note: This course fulfills the Non-Western studies requirement.

356 - SPANISH ART, MUSIC AND DANCE
4.00 Credit(s)
Development of Spanish art, architecture, music and dance from prehistoric times to the present. Prerequisite: SPAN 342 and permission of the department.
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION & SPORTS STUDIES

Professor Lauth (Chair); Associate Professors Campoli, Daugherty, Strayer; Assistant Professors Beaschler, Kaczkowski, Keller; Instructors Coleman, Conroy, Glen, Meyer, Witte; Lecturers Cole, Turner

Ohio Northern University’s health, physical education and sports studies programs provide opportunities for students to acquire the scientific knowledge, skills, favorable attitudes, and desirable habits for personal and community health and safety. Students prepare for professions and graduate school work in health education, physical education, sports management, sports medicine, and health/non-teaching.

The bachelor of arts and bachelor of science degrees are available to students enrolled in the department with the opportunity to major in the following academic areas:

- Physical Education (K-12) 74-76 hours
- Health Education (K-12) 57 hours
- Physical Education (7-12) 57-59 hours
- Sports Medicine 56 hours
- Sports Management 70 hours
- Health (non-teaching) 51 hours

The department provides courses of study leading to certification in the following areas:

- Driver Education - by the state of Ohio
- Athletic Coaching Certification - by Ohio Northern University 23-25 hours

For specific information concerning these areas, please contact the health, physical education and sports studies department chairperson.

Physical Education Service Courses

Service courses are those courses listed below the 100 level. Physical education service classes meet two hours per week for one hour credit. Classes are graded on the S/U basis. Students in all colleges with a physical education requirement are required to take a minimum of three hours, except for physical education majors.

Three different areas of activity classes are offered in the service course program to provide diversity in physical education experiences for the University student.
Wellness Area:
- Wellness Lab
- Weight Control and Nutrition

Fitness Area:
- Beginning Fitness
- Intermediate Fitness
- Advanced Fitness
- Weight Training and Physical Conditioning
- Aerobic Conditioning

Life Skills Area:
- Golf
- Tennis
- Beginners Swimming
- Intermediate Swimming
- Hiking and Backpacking
- Rhythmic Fundamentals
- Sailing and Seamanship
- Snow Skiing
- Social Dance
- Canoeing and Whitewater Rafting
- Bowling
- Billiards
- Archery
- Racquetball
- Self Defense
- Square and Folk Dance
- Volleyball
- Badminton

Special Requirements for Physical Education
Service Courses
- Tennis—tennis balls and racquet
- Golf—clubs (when possible)
- Intermediate Fitness—bicycle
- Racquetball—racquet, racquetballs, protective goggles
- Canoeing and Whitewater Rafting—fee required
- Bowling/Billiards—fee required
- Snow Skiing—fee required
- Hiking and Backpacking—fee required

Physical Education (all grades) 74-76 hours
- HPES 000 Orientation (1)
- HPES XXX Aquatics course (1-3)
- HPES 112 First Aid (2)
- HPES 113 Community CPR (1)
- HPES 132 Gymnastics Methods (2)
- HPES 133 General Methods (2)
- HPES 147 Basic Movement (2)
- HPES 151 HPESS Foundations (4)
- HPES 211 Team Sport Methods (2)
- HPES 212 Dance Methods (3)
- HPES 213 Individual & Dual Sports Methods (2)
- HPES 223 Kinesiology (4)
- HPES 243 Basic Athletic Training (4)
- HPES 271 Motor Learning (2)
- HPES 303 Org. & Admin. (4)
- HPES 304 Teach Tech. (1)
- HPES 305 Teach Tech. (1)
- HPES 324 Sports Psych. (2)
- HPES 360 Test Meas. HPE (4)
- HPES 402 Adapt. & Corr. PE (4)
- HPES XXX Coaching Techniques (6)

(Only one officiating course may apply)

Biology Courses
- BIOL 231 Anat. & Physio. I (4)
- BIOL 232 Anat. & Physio. II (4)
- BIOL 233 Exercise Physio. (4)

Education Courses
- EDUC 461 Meth. & Prin. PE (4)

Physical Education (secondary) 57-59 hours
- HPES 000 Orientation (1)
- HPES XXX Aquatics course (1-3)
- HPES 112 First Aid (2)
- HPES 113 Community CPR (1)
- HPES 132 Gymnastics Methods (2)
- HPES 133 General Methods (2)
- HPES 147 Basic Movement (2)
- HPES 151 HPESS Foundations (4)
- HPES 211 Team Sport Methods (2)
- HPES 212 Dance Methods (3)
- HPES 213 Individual & Dual Sports Methods (2)
- HPES 223 Kinesiology (4)
- HPES 243 Basic Athletic Training (4)
- HPES 303 Org. & Admin. (4)
- HPES 304 Teach Tech. (1)
- HPES 324 Sports Psych. (2)
- HPES 360 Test Meas. HPE (4)
- HPES 402 Adapt. & Corr. PE (4)

Biology Courses
- BIOL 231 Anat. & Physio. I (4)
- BIOL 232 Anat. & Physio. II (4)

Education Courses
- EDUC 461 Meth. & Prin. PE (4)
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<tr>
<td>HPES 000</td>
<td>Orientation (1)</td>
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<td>HPES 099</td>
<td>Wellness Lab (1)</td>
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<tr>
<td>HPES 110</td>
<td>Intro Hist/Fit (3)</td>
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<td>HPES 111</td>
<td>Pers. Hist Prob (4)</td>
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<td>HPES 112</td>
<td>First Aid (2)</td>
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<td>HPES 113</td>
<td>Community CPR (1)</td>
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<td>HPES 119</td>
<td>Sch. &amp; Comm. Hlth. (3)</td>
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<td>HPES 151</td>
<td>HPESS Foundations (4)</td>
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<tr>
<td>HPES 210</td>
<td>Adv. First Aid (3)</td>
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<td>HPES 303</td>
<td>Org. &amp; Admin. (4)</td>
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<td>HPES 402</td>
<td>Adapt. &amp; Corr. PE (4)</td>
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<tr>
<td>HPES 494</td>
<td>Health Seminar (3)</td>
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### Biology Courses

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<tr>
<td>BIOL 231</td>
<td>Anat. &amp; Physiol. I (4)</td>
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<td>BIOL 232</td>
<td>Anat. &amp; Physiol. II (4)</td>
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<td>BIOL 233</td>
<td>Exercise Physiol. (4)</td>
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### Education Courses

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<td>EDUC 460</td>
<td>Health Methods (4)</td>
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### Pharmacy Courses

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<tr>
<td>PHBS 350</td>
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### Health (non-teaching) 51 hours

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<td>Orientation (1)</td>
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<td>HPES 088</td>
<td>Wt. Control &amp; Nutr. (1)</td>
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<td>HPES 099</td>
<td>Wellness Lab (1)</td>
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<td>HPES 110</td>
<td>Intro. Hist./Fit. (3)</td>
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<tr>
<td>HPES 112</td>
<td>First Aid (2)</td>
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<td>HPES 113</td>
<td>Community CPR (1)</td>
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<tr>
<td>HPES 119</td>
<td>Sch. &amp; Comm. Hist. (3)</td>
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<td>HPES 261</td>
<td>Exer./Fit. Test &amp; Pre. (4)</td>
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<td>HPES 355</td>
<td>Org./Adm. Hist. Promo. (4)</td>
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<td>HPES 360</td>
<td>Test Meas. HPE (4)</td>
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<tr>
<td>HPES 494</td>
<td>Health Seminar (3)</td>
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<tr>
<td>HPES XXX</td>
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### Biology Courses

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<td>BIOL 232</td>
<td>Anat. &amp; Physiol. II (4)</td>
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<tr>
<td>BIOL 233</td>
<td>Exercise Physiol. (4)</td>
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### Pharmacy Courses

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<tr>
<td>PHBS 350</td>
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</table>

### Sports Medicine Major 56 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPES 000</td>
<td>Orientation (1)</td>
<td></td>
</tr>
<tr>
<td>HPES 112</td>
<td>First Aid (2)</td>
<td></td>
</tr>
<tr>
<td>HPES 113</td>
<td>Community CPR (1)</td>
<td></td>
</tr>
<tr>
<td>HPES 210</td>
<td>Adv. First Aid (3)</td>
<td></td>
</tr>
<tr>
<td>HPES 223</td>
<td>Kinesiology (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 243</td>
<td>Basic Athletic Training (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 371</td>
<td>Ther. Modal Ath. Tr. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 372</td>
<td>Exer. Rehab. Ath. Tr. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 275</td>
<td>Eval. Tech. Ath. Tr. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 276</td>
<td>Eval. Tech. Ath. Tr. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 402</td>
<td>Adapt. &amp; Corr. PE (4)</td>
<td></td>
</tr>
</tbody>
</table>

### Sports Management Major 70 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPES 000</td>
<td>Orientation (1)</td>
<td></td>
</tr>
<tr>
<td>HPES 151</td>
<td>HPESS Foundations (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 256</td>
<td>Soc. of Sport (3)</td>
<td></td>
</tr>
<tr>
<td>HPES 303</td>
<td>Org. &amp; Adm. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 324</td>
<td>Sport Psych. (2)</td>
<td></td>
</tr>
<tr>
<td>HPES 344</td>
<td>Practicum (1) (Must take one 345, 346, Practicum)</td>
<td></td>
</tr>
<tr>
<td>HPES 421</td>
<td>Legal Issues (3)</td>
<td></td>
</tr>
<tr>
<td>HPES 486</td>
<td>Sprt. Mgm. Inter. (15)</td>
<td></td>
</tr>
<tr>
<td>HPES 496</td>
<td>Sprt. Mgm. Seminar (1)</td>
<td></td>
</tr>
</tbody>
</table>

### Communication Arts Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 121</td>
<td>Argumentation (4)</td>
<td></td>
</tr>
<tr>
<td>COMM 130</td>
<td>Intro. Pub. Rel. (4)</td>
<td></td>
</tr>
<tr>
<td>COMM 211</td>
<td>Public Speaking (4)</td>
<td></td>
</tr>
</tbody>
</table>

One course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 212</td>
<td>221, 311, 315, 321, 330, 430</td>
<td></td>
</tr>
</tbody>
</table>

### Psychology and Sociology Courses

One course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 246</td>
<td>247, 301</td>
<td></td>
</tr>
</tbody>
</table>

### Business Administration Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABUS 312</td>
<td>Business Law I (4)</td>
<td></td>
</tr>
<tr>
<td>MGMT 330</td>
<td>Princ. of Mgmt. (4)</td>
<td></td>
</tr>
</tbody>
</table>

Two courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 211</td>
<td>ABUS 313, MGMT 325, MGMT 335, MGMT 363, MRKT 351, MRKT 371, MRKT 372</td>
<td></td>
</tr>
</tbody>
</table>

### ONU Coaching Certification 20-22 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPES 112</td>
<td>First Aid (2)</td>
<td></td>
</tr>
<tr>
<td>HPES 113</td>
<td>Community CPR (1)</td>
<td></td>
</tr>
<tr>
<td>HPES 243</td>
<td>Basic Ath. Train. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 256</td>
<td>Sociology of Sport (2)</td>
<td></td>
</tr>
<tr>
<td>HPES 303</td>
<td>Org. &amp; Admin. (4)</td>
<td></td>
</tr>
<tr>
<td>HPES 324</td>
<td>Sport Psych. (2)</td>
<td></td>
</tr>
<tr>
<td>HPES 334</td>
<td>Adv. Coach. (1-4)</td>
<td></td>
</tr>
</tbody>
</table>

Two coaching theory courses (only one officiating course may apply)

### Driver Education Endorsement 9 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPES 219</td>
<td>Psych. Factors Drv. (3)</td>
<td></td>
</tr>
<tr>
<td>HPES 433</td>
<td>Driver Education (3)</td>
<td></td>
</tr>
<tr>
<td>HPES 434</td>
<td>Org. &amp; Admin. Driving (3)</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credit(s)</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>001</td>
<td>Varsity Football Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>002</td>
<td>Varsity Cross Country Participation (Men)</td>
<td>1.00</td>
</tr>
<tr>
<td>003</td>
<td>Varsity Soccer Participation (Men)</td>
<td>1.00</td>
</tr>
<tr>
<td>004</td>
<td>Varsity Volleyball Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>005</td>
<td>Varsity Basketball Participation (Men)</td>
<td>1.00</td>
</tr>
<tr>
<td>006</td>
<td>Varsity Basketball Participation (Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>007</td>
<td>Varsity Cross Country Participation (Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>008</td>
<td>Varsity Soccer Participation (Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>010</td>
<td>Varsity Track Participation (Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>011</td>
<td>Varsity Wrestling Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>012</td>
<td>Varsity Track Participation (Men)</td>
<td>1.00</td>
</tr>
<tr>
<td>013</td>
<td>Varsity Tennis Participation (Men)</td>
<td>1.00</td>
</tr>
<tr>
<td>014</td>
<td>Varsity Tennis Participation (Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>015</td>
<td>Varsity Golf Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>016</td>
<td>Varsity Softball Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>017</td>
<td>Varsity Baseball Participation</td>
<td>1.00</td>
</tr>
<tr>
<td>018</td>
<td>Varsity Swimming Participation (Men and Women)</td>
<td>1.00</td>
</tr>
<tr>
<td>021</td>
<td>Weight Training and Physical Conditioning</td>
<td>1.00</td>
</tr>
<tr>
<td>024</td>
<td>Beginners Golf</td>
<td>1.00</td>
</tr>
<tr>
<td>027</td>
<td>Golf and Tennis</td>
<td>1.00</td>
</tr>
<tr>
<td>029</td>
<td>Racquetball</td>
<td>1.00</td>
</tr>
</tbody>
</table>
030 - BEGINNERS SWIMMING
1.00 Credit(s)
Only non-swimmers are allowed to take this course. To develop knowledge and skills necessary to save oneself and others. To provide background so students can progress toward Lifeguarding and Water Safety Instructor's certificate. Intermediate and advanced swimmers should not register for this course. (Life Skills)

033 - INTERMEDIATE SWIMMING
1.00 Credit(s)
To appreciate the recreational as well as physiological benefits of swimming. To perfect those elements found in beginning swimming and to further develop skills and knowledge necessary for increased enjoyment and safety in and around water. To further develop a working knowledge of basic rescue skills to ensure the safety of oneself and others. To acclimate oneself to the medium of deep water, both psychologically and physiologically. (Life Skills)

034 - BOWLING
1.00 Credit(s)
To offer the student an opportunity to understand the fundamentals of bowling. To teach scoring, etiquette and common courtesies. To provide an appreciation of the sport as a carry-over in their personal lives. (Life Skills)

036 - BEGINNING FITNESS
1.00 Credit(s)
An introduction to the development of an individualized low intensity fitness program which best fits the physical and mental needs of each student. Programs will be formulated and monitored by the students and instructor. Activities could include aerobic exercise or dance, self-paced walking and cardiovascular conditioning (jogging). (Fitness)

037 - INTERMEDIATE FITNESS
1.00 Credit(s)
An individualized medium intensity fitness program which best fits the physical and mental needs of each student. Programs will be formulated and monitored by the students and instructor. Activities could include cycling, hydrobics (fitness swimming), running and power walking. (Fitness)

038 - ADVANCED FITNESS
1.00 Credit(s)
An individualized high intensity fitness program which best fits the physical and mental needs of each student. Programs will be individually prescribed by the instructor in consultation with students. (Fitness)

040 - POCKET BILLIARDS
1.00 Credit(s)
To offer each student the opportunity to learn and participate in the fundamentals of billiards. (Life Skills)

042 - HIKING AND BACKPACKING
1.00 Credit(s)
An introduction to hiking and backpacking skills for the beginner; to include information on equipment and safety procedures. Students will be required to make at least one field trip which may require a lab fee. (Life Skills)

045 - RHYTHMIC FUNDAMENTALS
1.00 Credit(s)
To develop knowledge and skill in physical activities which can be performed with music or other forms of rhythmic accompaniment. To provide students with vigorous activity which is beneficial to fitness development. Offered odd numbered years. (Life Skills)

047 - SAILING AND SEAMANSHIP
1.00 Credit(s)
This course is designed to introduce the student to sailing on inland waters of the United States in a safe manner. The course is taught only in the classroom, and lessons in safe boating are included. (Life Skills)

049 - SNOW SKIING
1.00 Credit(s)
An introduction to snow skiing for the beginning skier. Course requirements will include basic classroom instruction dealing with equipment, techniques and safety for the beginner. Field trips will be arranged for the application and practice of skiing techniques. A course fee is required to cover lift tickets, travel expenses and rentals. Medical approval and participation waiver may be required. (Life Skills)

050 - SOCIAL DANCE
1.00 Credit(s)
An introduction to the traditional dance (i.e., waltz, fox trot, swing, samba, rhumba, cha-cha, tango). To acquire an understanding of dances and courtesies of dance. To identify music for appropriate dances. To develop basic knowledge of social dance steps, execution, leading and following. (Life Skills)
052 - CANOEING AND WHITE WATER RAFTING
1.00 Credit(s)
An introduction to canoeing and white water rafting skills for the beginner; to include information on equipment and safety procedures. A fee is required to cover travel expenses and rentals. Medical approval and participation waiver may be required. (Life Skills)

054 - BOWLING AND BILLIARDS
1.00 Credit(s)
An introduction to bowling and billiards skills for the beginning student. Emphasis will be placed on basic rules, playing strategies and skill development for life-time recreational enjoyment. Fee required. (Life Skills)

060 - ARCHERY
1.00 Credit(s)
The scope and extent of archery, selection of equipment, safety, bracing of the bow, methods of shooting, points of aim, scoring, correction of problems. Use of indoor and outdoor ranges. (Life Skills)

061 - RACQUETBALL AND TENNIS
1.00 Credit(s)
An introduction to racquetball and tennis skills for the beginning student. Emphasis will be placed on basic rules, playing strategies and skill development for life-time recreational enjoyment. (Life Skills)

062 - BADMINTON AND TENNIS
1.00 Credit(s)
An introduction to badminton and tennis skills for the beginning student. Emphasis will be placed on basic rules, playing strategies and skill development for life-time recreation enjoyment. (Life Skills)

063 - BADMINTON AND RACQUETBALL
1.00 Credit(s)
An introduction to badminton and racquetball skills for the beginning student. Emphasis will be placed on basic rules, playing strategies and skill development for life-time recreational enjoyment. (Life Skills)

070 - SELF DEFENSE
1.00 Credit(s)
Self defense maneuvers will enable the student to gain proficiency with fundamental punches, kicks, blocks and counters. An important part of this class is to create an awareness and an appreciation for self defense. (Life Skills)

078 - BADMINTON
1.00 Credit(s)
An introduction to the game of badminton. Knowledge of the rules, history, scoring, and strategies of both singles and doubles play will be emphasized. (Life Skills)

080 - BEGINNING TENNIS
1.00 Credit(s)
Recommended for non-tennis players. The course is designed to develop a basic knowledge of the history, rules, and courtesies of the game of tennis. The fundamental skills of tennis will be presented and practiced. (Life Skills)

083 - SQUARE AND FOLK DANCE
1.00 Credit(s)
To develop skills in folk and square dance. To acquire an understanding of the background and tradition (American and other countries) of folk and square dance. To develop an appreciation of folk and square dancing. A carry over activity for later life. (Life Skills)

086 - VOLLEYBALL
1.00 Credit(s)
The basic skills, strategies and rules of the game of volleyball will be taught. Participation is expected. (Life Skills)

087 - AEROBIC EXERCISE
1.00 Credit(s)
To offer each student an understanding of aerobic exercise and provide the opportunity to choose an activity to accomplish individual fitness needs. (Fitness)

088 - WEIGHT CONTROL AND NUTRITION
1.00 Credit(s)
An introductory course to basic nutrition and methods of healthy weight loss which could include prescribed activity. (Wellness)

090 - SPECIAL TOPICS IN HEALTH, PHYSICAL EDUCATION & SPORTS STUDIES
1.00 to 3.00 Credit(s)

099 - WELLNESS LAB
1.00 Credit(s)
A clinical experience in the evaluation of one’s wellness status. Participants will test their own individual fitness levels and will be provided with personalized exercise prescriptions. Wellness counseling will enable students to select those behaviors which are appropriate to a healthy life style. (Wellness)
000 - ORIENTATION-HEALTH, PHYSICAL EDUCATION, SPORTS STUDIES
1.00 Credit(s)

101 - WELLNESS ORIENTATION AND OBSERVATION
1.00 Credit(s)
A minimum of 45 clock hours of experience or observation in an organization, corporation, hospital or agency fitness or health promotion program.

110 - INTRODUCTION TO HEALTH AND FITNESS (WELLNESS)
3.00 Credit(s)
Basic knowledges, understandings and values of physical activity as well as wise health choices as these physical activities and health choices relate to optimal healthful living and positive wellness. Designed for individuals, regardless of age or sex, who desire total health/wellness through a combination and application of attitudes, knowledge and wise health choices/activities within the realm of diet, nutrition and exercise.

111 - PERSONAL HEALTH
4.00 Credit(s)
A theoretical and practical treatment of the concepts of disease prevention and health promotion. Course content includes topics such as emotional health; aging and death; alcohol, tobacco, and drug abuse; physical fitness; nutrition and dieting; consumer health; chronic and communicable diseases; human sexuality; and stress management.

112 - FIRST AID AND SAFETY
2.00 Credit(s)
Lectures, discussion and practice in the giving of first aid in emergencies. The American Red Cross Certification may be obtained by students who pass an examination.

113 - COMMUNITY CPR
1.00 Credit(s)
Instruct correct techniques in rescue breathing, obstructed airway and CPR for the adult, child and infant. Completion of the course will entitle the student to receive the American Red Cross Community CPR Card. Course can be taken only once for graduation credit. Course may be repeated an unlimited number of times for card renewal as space permits.

114 - ADVANCED LIFEGUARDING
2.00 Credit(s)
To develop knowledge and skills to aid in the prevention of aquatic accidents and an ability to give assistance to victims. The American Red Cross Advanced Lifeguarding certificate/emblem may be obtained by passing an examination. Prerequisite: Instructor approval.

115 - WATER SAFETY INSTRUCTION
3.00 Credit(s)
Teaching of swimming and water safety skills, methods and techniques. Successful completion of the course will lead to American Red Cross Water Safety Instruction certification. Meets 5 days per week. Prerequisite: Current certification in advanced lifeguarding.

119 - SCHOOL AND COMMUNITY HEALTH
3.00 Credit(s)
Skills and knowledge for aiding teachers and others to observe and understand the school child in health and illness; the health program of the public schools and the relationship of the school to the students' habits, attitudes and knowledge conducive to good health. Health matters with focus on health problems amenable to community action. Health and physical education majors only or permission of department chair.

132 - GYMNASTICS METHODS - MAJORS
2.00 Credit(s)
The fundamental skills, methods and techniques in teaching the following activities: tumbling, parallel bars, uneven bars, rings, horse, free exercise, balance beam, vaulting and horizontal bar. Offered odd years.

133 - GENERAL METHODS - MAJORS
2.00 Credit(s)
The fundamental skills, methods and techniques in teaching the following activities: track and field, basketball, softball, recreational games. Offered even years.

147 - BASIC MOVEMENT - MAJORS
2.00 Credit(s)
The principles and laws of motion as applied to basic human movement and performance. An introduction to the basic locomotor and axial movements possible in the human body and the utilization of these basic movements as they are combined in the efficient performance of complex tasks.
151 - HPE/SPORTS STUDIES FOUNDATIONS
4.00 Credit(s)
The student is introduced to five foundation areas - the historical, philosophical, psychological, physiological and sociological - of physical education, health education, and sports studies. A sixth unit treats scope, justification and needs of the profession and professional opportunities.

190 - SPECIAL TOPICS IN HEALTH, PHYSICAL EDUCATION, AND SPORTS STUDIES
1.00 to 4.00 Credit(s)

210 - ADVANCED FIRST AID-EMERGENCY CARE
3.00 Credit(s)
To increase knowledge, skill and experience in the application of first aid and emergency care. Information and skills will build upon those acquired while completing requirements of the Standard First Aid and Personal Safety Course or Multi-Media First Aid Course. Successful completion of this course entitles the student to an American Red Cross Advanced First Aid Card. Prerequisite: Current and Valid American Red Cross First Aid Card.

211 - TEAM SPORTS - MAJORS
2.00 Credit(s)
The fundamental skills, methods and techniques in teaching the following activities: speedball, soccer, various versions of touch football, field hockey, and volleyball.

212 - DANCE - MAJORS
3.00 Credit(s)
The fundamental skills and methods of teaching various areas of the dance; folk, square and social dance and rhythmic fundamentals. Offered even numbered years.

213 - INDIVIDUAL-DUAL ACTIVITIES - MAJORS
2.00 Credit(s)
The fundamental skills, methods and techniques in teaching the following activities: tennis, badminton, archery, golf, weight lifting and bowling. Offered odd numbered years.

219 - PSYCHOLOGICAL FACTORS IN DRIVING
3.00 Credit(s)
A study of behavior with emphasis on attitudes, motivation, and adjustment and their relationship to unsafe driving. Investigation of principles and methods appropriate in identifying, understanding, and modifying unsatisfactory driving behavior. Prerequisite: PSYC 100 recommended.

223 - KINESIOLOGY
4.00 Credit(s)
The study of the general body mechanics of the human organism; the activities of the physical education program in their relation to coordination and the proper body mechanics, analysis of movement. Prerequisites: BIOL 231 and 232.

233 - PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL
4.00 Credit(s)
The aims, objectives, methods, and techniques of teaching physical education in the elementary school. The need for physical activity and practical application of theories are emphasized. Prerequisite: sophomore standing. Includes approximately 10 hours of field experience.

243 - BASIC ATHLETIC TRAINING
4.00 Credit(s)
A head to toe examination focusing on the initial care and prevention of athletic injuries. Common risk factors and mechanism of athletic injuries will also be identified. Laboratory designed to familiarize the student with taping techniques.

256 - SOCIOLOGY OF SPORT
3.00 Credit(s)
Significance of sports in society; examination of relationships of sports to other elements of the culture; how sports contribute to human welfare in advanced technological society.

261 - EXERCISE/FITNESS TESTING AND PRESCRIPTION
4.00 Credit(s)
The concepts and principles of testing and evaluating fitness levels and the application of those results for the purpose of designing individual exercise prescriptions. Prerequisites: BIOL 231 and HPES 110.

271 - MOTOR LEARNING
2.00 Credit(s)
The study of rather permanent change in performance brought about through practice and excludes changes due to maturation, drugs or nutrients.
275 - EVALUATION TECHNIQUES IN ATHLETIC TRAINING
4.00 Credit(s)
The practical application of the injury evaluation process, incorporating origins, insertions, and innervations of selected muscle groups and manual muscle testing of the upper body, including the head and cervical spine. Also prepares students to make assessments of injuries, and formulate written injury evaluations and SOAP notes for documentation purposes. Prerequisites: BIOL 231; HPES 112 and 243. (Formerly HPES 375.)

276 - EVALUATION TECHNIQUES IN ATHLETIC TRAINING 2
4.00 Credit(s)
Continuation of HPES 275, but focusing on the lower body, with an in-depth look at postural abnormalities and goniometric measurements of selected joints. Prerequisite: HPES 275. (Formerly HPES 376.)

280 - ATHLETIC TRAINING CLINICAL - LEVEL 1
1.00 Credit(s)
Under the supervision of the Certified Athletic Trainer, students will undertake observation of training room operations and duties of the athletic trainer. The acquisition of basic skills and knowledge is expected. Prerequisites: HPES 112 and 243.

290 - SPECIAL TOPICS IN HEALTH, PHYSICAL EDUCATION AND SPORTS STUDIES
1.00 to 4.00 Credit(s)

300 - HEALTH PROMOTION PRACTICUM
3.00 Credit(s)
An on campus experience designed to give the student practical experience as a health promotion professional under the direct supervision of departmental staff. Experiences will be in the University Wellness program. Prerequisites: HPES 099, 110, 112, 243 and 261.

303 - ORGANIZATION AND ADMINISTRATION OF HEALTH, PHYSICAL EDUCATION, AND SPORTS STUDIES
4.00 Credit(s)
Examination of the philosophy, principles, problems, policies and procedures essential in the organization and administration of meaningful programs in health education, physical education, and sports studies. Prerequisite: HPESS majors only and junior status.

304 - PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION
1.00 Credit(s)
Required of all physical education majors, preferably in their junior year. This class involves assisting in service classes. Permission of department chair required.

305 - PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION
1.00 Credit(s)
Continuation of HPES 304. Required of all physical education majors. Prerequisites: HPES 304 and permission of the department chair.

306 - PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION
1.00 Credit(s)
Continuation of HPES 304-305. Permission of department chair required.

308 - TECHNIQUES-COACHING VOLLEYBALL
2.00 Credit(s)
To develop a basic expertise in the techniques and knowledge of coaching volleyball. To provide laboratory experiences in the practical application of techniques and knowledge of coaching volleyball. Upon successful completion of course requirements and instructor’s recommendation, participants may receive USVBA Level I certification. Offered odd numbered years.

310 - TECHNIQUES - COACHING SOFTBALL
2.00 Credit(s)
To develop a basic expertise in the knowledge and techniques of coaching softball. To provide laboratory experiences in the practical application of techniques and knowledge of coaching softball. Emphasis is on fast pitch. Offered odd numbered years.

315 - OFFICIATING-VOLLEYBALL
2.00 Credit(s)
Knowledge and techniques of officiating volleyball. National Federation rules. Laboratory experiences during intramural volleyball. Offered even numbered years. Federation licensing available upon successful completion of course.
317 - THEORY OF TRACK AND FIELD OFFICIATING
2.00 Credit(s)
Knowledge and techniques of officiating track and field. National Federation rules. Laboratory experiences during varsity track and field. Offered odd numbered years.

319 - THEORY AND METHOD OF COACHING TRACK
2.00 Credit(s)
Methods and forms for all of the events in track and field. Lectures, reports, demonstrations and practice. Offered even numbered years.

320 - THEORY OF COACHING AND OFFICIATING WRESTLING
2.00 Credit(s)
Equipment, fundamentals of the art and skill of wrestling. Students may acquire state certification in wrestling officiating. Offered even numbered years only.

321 - THEORY OF FOOTBALL COACHING
2.00 Credit(s)
Equipment, fundamentals of the game, kicking, passing, handling the ball, tackling, blocking; individual position play; offensive and defensive formation; strategy and generalship. To prepare students to coach on the junior high and senior high level.

322 - THEORY OF COACHING BASKETBALL
2.00 Credit(s)
The fundamentals: passing, shooting, dribbling, feinting and pivoting, styles of offense and defense, equipment, conditioning, the handling of a team in games. Lectures, demonstrations and practice. Open to juniors and seniors only or by permission of instructor.

323 - THEORY OF COACHING BASEBALL
2.00 Credit(s)
Individual position and team play in baseball. Lectures, reports, demonstration, and practice.

324 - SPORTS PSYCHOLOGY
2.00 Credit(s)
The cultural, emotional, psychological and sociological aspects of coaching. Player-coach relationship, understanding the athlete, improving coaching effectiveness.

327 - THEORY OF COACHING SOCCER
2.00 Credit(s)
Equipment, fundamentals of the game: kicking, passing, playing the ball, strategy and generalship. Offered on demand.

334 - ADVANCED COACHING INTERNSHIP-EXTERNSHIP
1.00 to 4.00 Credit(s)
Coaching under supervision in all sports in season. Hours arranged. Six hours maximum toward graduation. Prerequisite: Permission of department chair.

335 - ADVANCED COACHING INTERNSHIP-EXTERNSHIP
1.00 to 4.00 Credit(s)
Prerequisite: Permission of department chair.

336 - ADVANCED COACHING INTERNSHIP-EXTERNSHIP
1.00 to 4.00 Credit(s)
Prerequisite: Permission of department chair.

342 - BASKETBALL OFFICIATING
2.00 Credit(s)
The study of basketball rules and mechanics from the standpoint of player, coach and official. Taught odd numbered years.

344 - SPORT MANAGEMENT PRACTICUM - TEAM PROMOTIONS
1.00 Credit(s)
This course is designed to give Sport Management Majors the opportunity to acquire promotional experience through involvement with a sport team at the University. Prerequisite: Junior status and permission of department chair.

345 - SPORT MANAGEMENT PRACTICUM - FACILITIES MANAGEMENT
1.00 Credit(s)
This course is designed to give Sport Management Majors the opportunity to experience facilities management through involvement with the sports facilities at the University. Prerequisite: Junior status and permission of the Department Chair.

346 - SPORT MANAGEMENT PRACTICUM - TEAM MANAGEMENT
1.00 Credit(s)
This course is designed to give Sport Management Majors the opportunity to experience administrative management of a sport team at the University. Prerequisite: Junior status and permission of Department Chair.
355 - ORGANIZATION & ADMINISTRATION OF HEALTH PROMOTION PROGRAMS
3.00 Credit(s)
A study of the design implementation, organization, administration and evaluation of health promotion programs; consists of competencies and strategies in administrative tasks, programming, facilities, equipment, marketing, sales, finance and liability. Prerequisite: Junior status.

360 - TESTS AND MEASUREMENTS OF HEALTH AND PHYSICAL EDUCATION
4.00 Credit(s)
Fundamental considerations of measurement; physical education and health measurements; test evaluation; criteria of tests; validity of tests; accuracy of tests; physical fitness; skills tests; application of measurement; elements of statistics.

371 - THERAPEUTIC MODALITIES IN ATHLETIC TRAINING
4.00 Credit(s)
Indications and contraindications of therapeutic modalities in the treatment of athletic injuries as they relate to the healing process. Prerequisites: BIOL 233 and HPES 276.

372 - EXERCISE REHABILITATION IN ATHLETIC TRAINING
4.00 Credit(s)
Basic components of a comprehensive rehabilitation program. Selection of therapeutic exercises for injuries/corrective surgeries sustained by the competitive athlete. Prerequisite: HPES 371.

390 - SPECIAL TOPICS IN HEALTH, PHYSICAL EDUCATION, AND SPORTS STUDIES
1.00 to 4.00 Credit(s)

402 - ADAPTIVE AND CORRECTIVE PHYSICAL EDUCATION
4.00 Credit(s)
For the professionals who are concerned with physical education for people with disabilities; to develop an understanding of the various disabling conditions and to explore methods of adapting physical activities to meet the needs of the atypical student in the physical education class. Prerequisite: HPES 223.

421 - LEGAL ISSUES IN PHYSICAL EDUCATION & SPORT
3.00 Credit(s)
The purpose of the course is to develop an awareness of the complexities concerning sports litigation, primarily in the focus of educational institutions. To use this new knowledge to assist their professional growth in the field. To have a clear understanding of the Law and its fundamental elements. Prerequisite: Junior status.

433 - DRIVER EDUCATION
3.00 Credit(s)
Actual in-car driving and teaching experiences. For those students who plan to teach driver education in the public/private schools.

434 - ORGANIZATION AND ADMINISTRATION OF DRIVERS AND TRAFFIC SAFETY
3.00 Credit(s)
Organizational and administrative aspects of driver and traffic education as they relate to the total school and other specialized programs. For those who seek state certification in driver training. Historical and philosophical aspects, evaluation, related professional organizations and occupational opportunities.

480 - ATHLETIC TRAINING CLINICAL II
1.00 Credit(s)
Under the supervision of the Certified Athletic Trainer students will be provided the opportunity to practice those skills necessary of the athletic trainer. The students who have shown to be capable and responsible will have the major responsibility of covering a sport, to begin to develop independent athletic training skills. Prerequisites: HPES 280 and/or permission of the instructor.

485 - WELLNESS AND HEALTH PROMOTION INTERNSHIP
3.00 to 15.00 Credit(s)
Participation in a broad based, off-campus experience designed to place the student in a fitness development or health promotion program under the supervision of the University as well as a worksite supervisor. Prerequisites: Senior status; 2.00 GPA; 2.50 GPA in major; 143-355; and permission of the department chair required.
486 - SPORTS MANAGEMENT INTERNSHIP
1.00 to 15.00 Credit(s)
Specially planned sports management work throughout the quarter to provide direct employment experience. Emphasis is on the practical application of theory and knowledge in developing professional skills. To be taken concurrently with the Sports Management Seminar to assist the students with the integration of field work and classroom learning. Permission of department chair required.

490 - SPECIAL TOPICS IN HEALTH, PHYSICAL EDUCATION, AND SPORTS STUDIES
1.00 to 4.00 Credit(s)

494 - HEALTH SEMINAR
3.00 Credit(s)
An in-depth analysis of current health problems, issues and trends as they apply to the teacher of health education. Offered even numbered years.

495 - TRENDS IN ATHLETIC TRAINING
3.00 Credit(s)
Current topical issues affecting the Athletic Training Profession include organization and administration topics, legal issues, basic pharmacology and selected health issues that are present in the athletic population. Prerequisite: Junior or senior status and HPES 372 and/or permission of the instructor.

496 - SPORTS MANAGEMENT SEMINAR
1.00 Credit(s)
Discussion and analysis of the field setting, practice and organization. Includes monitoring and evaluation of the student internships. To be taken concurrently with Sports Management Internship.

497 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Permission of department chair required.
DEPARTMENT OF HISTORY, POLITICAL SCIENCE, AND CRIMINAL JUSTICE

Professors Davis, Ludanyi, Peltier, Saffell; Associate Professors Lomax, Loughlin, McGucken, Scott, Wilson (Chair); Assistant Professor Mackey

The Wilfred E. Binkley Chair of History and Political Science, inaugurated in 1971, has been made possible by a grant from the Scale Foundation of Pittsburgh. The 1993-94 recipient of this professorship is Michael B. Loughlin, associate professor of history.

The Kernan Robson Chair of Government, inaugurated in 1972, has been made possible by a trust established by the late Kernan Robson. The 1993-94 recipient of this professorship is Robert R. Davis, Jr., professor of political science and history.

The department offers separate majors in history, political science, criminal justice, and international studies. To pursue a dual major students must complete all the requirements for each separate major.

Majors in history and political science prepare students generally for careers in teaching, law, journalism, government service, or business. Criminal justice prepares students for employment in law enforcement, corrections, and court management. International studies majors prepare for careers in government or business. There are special departmental advisors for prelaw and teacher certification.

There are active chapters of Phi Alpha Theta, the national history honorary, Pi Sigma Alpha, the national political science honorary, and Alpha Phi Sigma, the national criminal justice honorary. Public service internships are available at all levels of government, including the Ohio Legislature. Public history interns include work in museums and in archival management. Students annually participate in the National Model United Nations in New York City and a mock trial program in Des Moines, Iowa. The department also offers students the opportunity to participate in the Washington Semester Program sponsored by American University.

The department also participates in study-abroad programs. Students majoring in history are encouraged to consider a term or year abroad at St. David's University College in Wales. Political science, criminal justice, and international studies majors are directed toward Glasgow Caledonian University.

Major in History
Specific requirements for the history major:
Orientation 000 1 hour
History 110-111 8 hours
History 204 4 hours
Political Science 206-207 8 hours
History 214-215 8 hours
One contemporary affairs course from 222, 223, 224, 225, 226 4 hours
History 488 and 489 3 hours
28 hours history electives, distributed as follows:
World History—8 hours
(excluding contemporary affairs courses)
American History—8 hours
Electives—12 hours
(excluding contemporary affairs courses)

Minor in History
History 110-111 8 hours
History 204 4 hours
American History 214, 215 8 hours
One contemporary affairs course from 222, 223, 224, 225, 226 4 hours
World History 4 hours
U.S. History 4 hours
Elective 4 hours

Major in Political Science
Specific requirements for the political science major are:
Orientation 000 1 hour
Political Science 105 4 hours
Scope and Methods 205 4 hours
American Government 206, 207 8 hours
U.S. History 214, 215 8 hours
Western Political Thought 458 or 459 4 hours
One contemporary affairs course from 222, 223, 224, 225, 226 4 hours
Two courses in American politics 8 hours
Two courses in world politics 8 hours
Political Science 488 and 489 3 hours
Electives 8 hours

Minor in Political Science
Political Science 105 4 hours
Scope and Methods 205 4 hours
American Government 206, 207 8 hours
One contemporary affairs course from 222, 223, 224, 225, 226 4 hours
Western Political Thought 458 or 459 4 hours
One course in American politics 4 hours
One course in world politics 4 hours
Elective 4 hours
Major in Criminal Justice
Specific requirements for the Criminal Justice major:
Orientation 000 1 hour
Scope and Methods 205 4 hours
Introduction to Criminal Justice 121 4 hours
Police in America 241 4 hours
Corrections 245 4 hours
Criminology SOC 261 4 hours
Judicial Process and Criminal Law 342 4 hours
Delinquency and Juvenile Justice SOC 361 4 hours
Psychology 215, 305, 311, 320, 422 8 hours
Political Science 207 4 hours
Political Science 350 or 351 4 hours
Political Science 311 or 366 4 hours
Political Science 355 or Poverty and Inequality
Sociology 240, 243, 246, 247, 351 8 hours
Criminal Justice elective 4 hours
Political Science 488 and 489 3 hours

Minor in Criminal Justice
Introduction to Criminal Justice 121 4 hours
Police in America 241 4 hours
Corrections in America 245 4 hours
Judicial Process and Criminal Law 342 4 hours
Criminology SOC 261 4 hours
Delinquency and Juvenile Justice SOC 361 4 hours

Three electives are taken in two of the following disciplines (political science, psychology, and or sociology) and outside the student’s major. These courses must be taken from among those approved for the major. All criminal justice minors must take at least one course in psychology and demonstrate competence in social science methods.

Major in International Studies
Specific requirements for the International Studies major:
Orientation 000 1 hour
History 204 or Political Science 205 4 hours
Political Science 222, 223, 224, 225 (any two) 8 hours
Political Science 226 4 hours
International Studies Seminar 4 hours
Political Science 388 4 hours
Political Science 452 4 hours
Economics 202-203 8 hours
Economics 385 or 411 or 442 4 hours
Political Science 334, 335, 336, 475 (any two) 8 hours
History 383, 384, 416, 471 (any two) 8 hours
Political Science 488 and 489 3 hours

Majors are required to show second year competency in a foreign language (usually French, Spanish, or German) as determined by the department of foreign languages. Each student must complete one literature course in same language.
Majors are encouraged to take Religion 107 and Political Science 105 to meet general education requirements.

Teacher Certification with Major in History or Political Science

History
Orientation 000 1 hour
Western Civilization 110, 111 8 hours
Historiography 204 4 hours
American Government 206, 207 8 hours
United States History 214, 215 8 hours
Human Geography 226 4 hours
Ohio and the Frontier 305 4 hours
African-American History 365 4 hours
Social Studies Methods EDUC 453 4 hours
Two courses in World History 8 hours
One course in U.S. History 4 hours
History 488 and 489 3 hours
Elective 4 hours

Political Science
Orientation 000 1 hour
Political Science 105 4 hours
Scope and Methods 205 4 hours
American Government 206, 207 8 hours
United States History 214, 215 8 hours
Social Studies Methods EDUC 453 4 hours
Theory 458 or 459 4 hours
Political Science 488 and 489 3 hours
Non-Western/Third World Politics 4 hours
Two courses in American politics 8 hours
Two courses in world politics 8 hours
Electives 4 hours

Comprehensive Social Studies Certification
Ohio Northern University does not offer a degree in comprehensive social studies. Students may, however, obtain such certification through the efficient utilization of free electives taken in conjunction with a history major. This will qualify the student for teaching certification in comprehensive social studies by the State Department of Education of Ohio.

In addition to the history major, social studies comprehensive requires a minimum of 60 hours distributed over four basic areas: political science, economics, and psychology/
sociology. The student must complete a 28 hour concentration in either political science, economics or psychology/sociology, and a 32 hour distributional requirement in the two areas outside the second concentration.

**28 hour secondary concentration options:**

**A. Political Science**
- PLSC 105 4 hours
- PLSC 206, 207 8 hours*
- PLSC 222, 223, 224, 225, 334, 335, 336 (any one) 4 hours
- PLSC Electives at the 300-400 level 12 hours* required in history major

**B. Economics**
- ECON 202-203 8 hours
- ECON 383-384 8 hours
- ECON Electives 12 hours

**C. Psychology/Sociology**
- PSYC 100 4 hours
- SOC 105 4 hours
- PSYC 212, 215 8 hours
- SOC 252, 301 8 hours
- SOC 240, 243, 246, 247, 348 (any one) 4 hours

**32 hour distributional requirement**

All of the following courses must be completed for social studies certification, but no course taken as part of the 28 hour social science concentration can be counted toward the 32 hours.* Additional hours needed to fill the 32 hour requirement must be selected from those included in elementary education concentration areas in political science or economics.
- SOC 250 4 hours
- ECON 202, 203 8 hours
- PSYC 100, 212 8 hours
- SOC 105, 252 8 hours
- PLSC 105 4 hours

*e.g. A student choosing the Political Science concentration option cannot count PLSC 105 toward the 32 hour distributional requirement.

**Prelaw Program** In addition to its emphasis upon prelaw advisement, the department cooperates with the Pettit College of Law at Ohio Northern University relative to the formal guaranteed admission prelaw program.
110 - WESTERN CIVILIZATION 1
4.00 Credit(s)
Ideas, attitudes, and institutions basic to civilization as it developed in the West from ancient times to the seventeenth century.

111 - WESTERN CIVILIZATION 2
4.00 Credit(s)
Ideas, attitudes, and institutions basic to civilization as it developed in the West from the seventeenth century to the present.

190 - SPECIAL TOPICS IN HISTORY
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

204 - HISTORIOGRAPHY AND HISTORICAL METHODS
4.00 Credit(s)
Western historical thought from the Greeks to the present. Research methods for history majors and minors. Requires a fully documented research paper on an historical topic. Prerequisite: Sophomore status.

214 - UNITED STATES HISTORY TO 1865
4.00 Credit(s)
American colonial and United States history from 1492 to 1865. Emphasis is placed on the formation of American political, economic, and social attitudes and their application in the early Republic. (Formerly 211 and 212.)

215 - UNITED STATES HISTORY SINCE 1865
4.00 Credit(s)
A history of the United States since the Civil War. Major topics include the role played by the U. S. in global affairs and U. S. domestic policy. (Formerly 212 and 213.)

290 - SPECIAL TOPICS IN HISTORY
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

305 - OHIO AND THE FRONTIER
4.00 Credit(s)
The political and cultural evolution of Ohio from the prehistoric period. This is done in the context of French and British backgrounds and U. S. territorial expansion of the late eighteenth and early nineteenth centuries. Offered alternate years. (Formerly 303 and 381.)

323 - GREAT BRITAIN AND IRELAND TO 1714
4.00 Credit(s)
The political, social, economic, and cultural development of the peoples of Great Britain and Ireland from antiquity to 1714. Offered alternate years. (Formerly 321 and 322.)

355 - TOPICS IN NORTH AMERICA TO 1783
4.00 Credit(s)
Includes topics such as: Religion in America, the French in North America, the British in North America, Revolutionary America, Race and Gender in America. (Formerly 353 and 381.)

365 - AFRICAN-AMERICAN HISTORY
4.00 Credit(s)
The essential facts, trends, and interpretations in the history of the African-American from the African beginnings to the present-day. Offered alternate years.

372 - THE ANCIENT WORLD
4.00 Credit(s)
The political, social, economic, and cultural development of the Near Eastern, Greek, and Roman civilizations of antiquity. Offered alternate years.

373 - MEDIEVAL EUROPE
4.00 Credit(s)
The political, social, economic, and cultural development of Europe from the decline of the Roman Empire to the beginning of the Renaissance with special attention to the emergence of institutions that shaped the modern world. Offered alternate years.

374 - RENAISSANCE AND REFORMATION
4.00 Credit(s)
The evolution of the Italian communes, European cultural movements from the fourteenth through the sixteenth centuries. The Church and European society in the later Middle Ages, the Protestant Reformation, the Catholic Reformation, and the Wars of Religion. Offered alternate years.

382 - ABSOLUTISM, ENLIGHTENMENT, AND THE FRENCH REVOLUTION
4.00 Credit(s)
The history of Europe covers the Treaty of Westphalia to the French Revolution. The rise of the modern state, the ancient regime, the origins and nature of the French Revolution, and the coming of Napoleon are stressed. Offered alternate years. (Formerly 322, 375 and 376.)
383 - HISTORY OF MODERN EUROPE 1
4.00 Credit(s)
European history from 1815 to the era before World War I. This course covers Europe from the age of Reaction and the Romantics to the age of Realism, Naturalism, and Modernism. Offered alternate years. (Formerly 377)

384 - HISTORY OF MODERN EUROPE 2
4.00 Credit(s)
A summary of European history from the origin of World War I to the collapse of the Soviet Empire and the evaluation of the European community. Offered alternate years. (Formerly 221 and 378)

390 - SPECIAL TOPICS IN HISTORY
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

451 - HISTORY OF LAW
4.00 Credit(s)
The evolution of law as an instrument of dispute resolution and social control. The development of the Roman and civil law tradition and the English common law tradition to the eighteenth century. Offered alternate years.

454 - CIVIL WAR AND RECONSTRUCTION
4.00 Credit(s)
Causes, duration, aftermath, and consequences of the American Civil War. Offered alternate years.

462 - TOPICS IN NORTH AMERICA SINCE 1783
4.00 Credit(s)
Includes topics such as: the Early Republic, Religion in America, the War of 1812, Mid-19th Century Politics in North America, Race and Gender in North America, and Environmental History. (Formerly 381)

471 - HISTORY OF THE OTTOMAN EMPIRE
4.00 Credit(s)
An examination of the emergence, expansion and decline of Turkish power in South-Eastern Europe, Asia Minor, Central Asia and North Africa from the time of the Seljuks to the Young Turks, with particular emphasis on the empire's military, political and cultural legacy. Offered alternate years.

481 - PUBLIC SERVICE INTERNSHIP PROGRAM
1.00 to 16.00 Credit(s)
Field experience in the area of public service. Selected students upon proper application, screening, and acceptance, will work in close relationship with public offices and officials. Those interns serving in a local agency would generally receive six quarter hours credit for approximately ten hours of service per week, while those interns serving in Columbus or Washington D.C. on a full-time quarterly basis, would generally receive fifteen hours credit. Prerequisites: Consultation with the department internship committee and completion of the application process. A maximum of six (6) hours will count toward major requirements.

488 - SENIOR RESEARCH PAPER 1
1.00 Credit(s)
Topic selection, development of bibliography and outline for senior paper (See HIST 489) directed by a departmental faculty member. Required of all departmental majors. Students will enroll in this course at least two quarters before the quarter in which they expect to graduate. Prerequisites: Senior status; major in History or International Studies.

489 - SENIOR RESEARCH PAPER 2
2.00 Credit(s)
Students will write a research paper directed by a department faculty member relevant to their major. Required of all departmental majors. Students should enroll in this course before the quarter in which they expect to graduate. Prerequisite: HIST 488.

490 - SPECIAL TOPICS IN HISTORY
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

494 - SEMINAR IN HISTORY
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

497 - INDEPENDENT STUDY IN HISTORY
1.00 to 4.00 Credit(s)
Approval of department chairman required prior to registration.
Subject - History, Political Science and Criminal Justice (HPS)

000 - HISTORY AND POLITICAL SCIENCE ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning a program of courses, the University catalog, careers and library. Required of majors in history, political science, criminal justice, and international studies.

222 - CONTEMPORARY ASIA
4.00 Credit(s)
An examination of the political, socioeconomic and intellectual development of Asia since the conclusion of World War II. Open to freshmen.

223 - CONTEMPORARY AFRICA
4.00 Credit(s)
Political, socioeconomic, and intellectual development of Africa since the conclusion of World War II. Open to freshmen.

224 - CONTEMPORARY MIDDLE EAST
4.00 Credit(s)
An examination of the political, socioeconomic and intellectual development of the Middle East since the conclusion of World War II. Open to freshmen.

225 - CONTEMPORARY LATIN AMERICA
4.00 Credit(s)
The political, socioeconomic, and intellectual development of Latin America since the conclusion of World War II.

226 - HUMAN GEOGRAPHY
4.00 Credit(s)
The historical and current relationship between humankind and the environment, with special emphasis on population and ecology.

278 - INTRODUCTION TO CANADIAN STUDIES
4.00 Credit(s)
Canada's history, politics, geography, environment, economics, and literature. Interdisciplinary, team taught.

311 - URBAN HISTORY AND POLITICS
4.00 Credit(s)
The historical development of American cities and the contemporary political issues faced by cities and their suburbs. Offered alternate years. (Formerly 310 and 312)

350 - CONSTITUTIONAL LAW 1
4.00 Credit(s)
Social and political forces that shaped constitutional political theory and the interaction of law and politics through the Reconstruction era. Relationship of the Supreme Court vis-a-vis Congress, the Executive, States, and emergency powers. Offered alternate years. (Formerly 348)

351 - CONSTITUTIONAL LAW AND CIVIL LIBERTIES
4.00 Credit(s)
Late nineteenth and twentieth century decisions of the Supreme Court with special attention directed to civil liberties and civil rights issues. Offered alternate years. (Formerly 349 and 427)

361 - RECENT AMERICAN HISTORY 1
4.00 Credit(s)
The history of the United States from the beginning of World War I until the conclusion of World War II. Offered alternate years.

362 - RECENT AMERICAN HISTORY 2
4.00 Credit(s)
The history of the United States from the conclusion of World War II to the present day. Offered alternate years.

415 - RUSSIAN HISTORY AND POLITICS 1
4.00 Credit(s)
The social, political, and economic development of the Russian state from ancient Kiev to Appanage Russia and the Mongol Invasion to the Muscovite State of Ivan the Dread, the Time of Troubles, and the Romanov dynasty to 1801. Offered alternate years. (Formerly 324 and 325)

416 - RUSSIAN HISTORY AND POLITICS 2
4.00 Credit(s)
The demographic, historical and ideological survey of the basis of the Russian political system. Special attention is given to the impact of culture and structure on governmental and social institutions, as well as the influence of ideological movements and economic conditions. Offered alternate years. (Formerly 325, 421 and 422)

452 - AMERICAN FOREIGN RELATIONS
4.00 Credit(s)
An analytical and conceptual overview of the nature of American Foreign Policy decision-making with a use of case studies to uncover the variables at play in recent American Foreign Policy. Offered alternate years.
458 - WESTERN POLITICAL THOUGHT 1
4.00 Credit(s)
An examination of Western Political Theory commencing with Plato, Aristotle, and the Stoics. Proceeds through Machiavelli and finishes with the Reformation and its political implications. Offered alternate years. (Formerly 455 and 456)

459 - WESTERN POLITICAL THOUGHT 2
4.00 Credit(s)
An examination of Western Political Theory commencing with the Enlightenment and ending with John Rawls. Constitutionalism, Contract Theory, Conservatism, Idealism, Liberalism, Utilitarianism, Marxism, Anarchism, Socialism, Feminism, and Environmentalism shall be considered. Offered alternate years. (Formerly 456 and 457)

475 - MODEL UNITED NATIONS TODAY
4.00 Credit(s)
Prepares students to participate in the National Model United Nations in New York City. This is an integrated and serious simulation of many aspects of the United Nations. Students travel to New York City in the spring. Application to and approval of the departmental Model U.N. advisors are prerequisites for registering for this course. May be repeated 3 times for credit, but only 8 hours can count toward major or minor requirements.

476 - MOCK TRIAL
4.00 Credit(s)
Prepare students to participate in both the regional and national mock trial competition held at the University of Toledo and Drake University, respectively. Preparation of both civil and criminal cases including opening and closing arguments, direct and cross examination of witnesses, and objections. Course may be repeated for a total of three times but only eight hours may count toward departmental majors. Prerequisite: Permission of instructor.

191 - SPECIAL TOPICS IN POLITICAL SCIENCE
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

205 - SCOPE AND METHODS
4.00 Credit(s)
Empirical concepts and tools for analyzing and explaining political phenomena. Nuts and bolts of Political Science analysis. Hands-on experience in applying and developing concepts and tools for modern qualitative and quantitative analysis.

206 - AMERICAN GOVERNMENT 1
4.00 Credit(s)
Legal foundations of federal, state, and local government and the political behavior of the American people. (Formerly 201 and 203)

207 - AMERICAN GOVERNMENT 2
4.00 Credit(s)
Institutions of federal, state, and local government and selected areas of domestic public policy. (Formerly 202 and 203)

241 - POLICE IN AMERICA
4.00 Credit(s)
Historical, philosophical and legal basis of police institutions, practices, and procedures. Issue oriented course and discussion topics will vary with prevailing issues.

245 - CORRECTIONS IN AMERICA
4.00 Credit(s)
Historical, philosophical, and legal basis of correctional procedures and institutions. Issue oriented course and discussion topics will vary with prevailing correctional issues.

291 - SPECIAL TOPICS IN POLITICAL SCIENCE
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

334 - PARLIAMENTARY DEMOCRACIES
4.00 Credit(s)
A comparison of the politics of contemporary democracies, stressing the impact of political culture and the operations of governmental institutions, parties and interest groups in the process of public policy-making. Offered alternate years.

335 - AUTOCRATIC POLITICAL SYSTEMS
4.00 Credit(s)
A comparison of the politics of contemporary dictatorships, stressing the operations of the single-party control system, the role of leaders, of governing classes and elites, and governing agencies and ideological orientations. Offered alternate years.
336 - DEVELOPING POLITICAL SYSTEMS
4.00 Credit(s)
A comparison of contemporary politics in
developing societies, stressing the impact of
cultural fragmentation, modernization, social
unrest and rising expectations on the stability and
effectiveness of governmental institutions and
processes. Offered alternate years.

342 - JUDICIAL PROCESS AND CRIMINAL LAW
4.00 Credit(s)
The roles of lawyers, judges, and juries and the
organization and operation of federal and state
courts, with special emphasis on criminal law
procedure. Offered alternate years. (Formerly
241 and 426)

347 - POLITICAL PARTIES-INTEREST
GROUPS-ELECTIONS
4.00 Credit(s)
The organization and activities of political parties
and interest groups and their impact on the
political process, especially their roles in election
campaigns. Offered alternate years.

355 - MINORITIES AND WOMEN IN CRIMINAL
JUSTICE
4.00 Credit(s)
The role of minorities and women in the American
criminal justice system. Issues relating to
minorities and women as offenders, victims of
crime, and criminal justice professionals will be
presented and explored. Additionally, concepts
such as racism, prejudice, discrimination and
victimization will be examined. Offered alternate
years. Prerequisite: PLSC 105 or 121.

366 - PUBLIC ADMINISTRATION AND POLICY
ANALYSIS
4.00 Credit(s)
Bureaucrats as actors in the American political
system, their sources of power, their relationship
to elected public officials, the basic dynamics and
problems in the policymaking process and widely
used analytical approaches to public policy.
Offered alternate years. (Formerly 363 and 436)

388 - INTERNATIONAL RELATIONS AND LAW
4.00 Credit(s)
An examination of the factors and forces which
determine the policies of nation states and the
structure, operation and legal setting of interna-
tional organizations. Particular emphasis is on
the United Nations as well as regional institutions
such as the European Community. Offered
alternate years. (Formerly 371 and 441)

391 - SPECIAL TOPICS IN POLITICAL SCIENCE
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

429 - EXECUTIVE PROCESS
4.00 Credit(s)
The historical development and contemporary
operation of the presidency and governorships.
Offered alternate years. (Formerly 424)

430 - LEGISLATIVE PROCESS
4.00 Credit(s)
The structure and operation of Congress and state
legislatures. Offered alternate years. (Formerly 425)

481 - PUBLIC SERVICE INTERNSHIP PRO-
GRAM
1.00 to 16.00 Credit(s)
Field experience in the area of public service.
Selected students upon proper application,
screening, and acceptance, will work in close
relationship with public offices and officials.
Those interns serving in a local agency would
generally receive six quarter hours credit for
approximately ten hours of service per week,
while those interns serving in Columbus or
Washington D.C. on a full-time quarterly basis,
would generally receive fifteen hours credit.
Prerequisites: Consultation with the departmental
internship committee and completion of the
application process. A maximum of six hours will
count toward major requirements.

488 - SENIOR RESEARCH PAPER 1
1.00 Credit(s)
Topic selection, development of bibliography and
outline for senior paper (see PLSC 489) directed
by a departmental faculty member. Required of
all departmental majors. Students will enroll in
this course at least two quarters before the quarter
in which they expect to graduate. Prerequisites:
Senior status; major in Political Science or
Criminal Justice or International Studies.

489 - SENIOR RESEARCH PAPER 2
2.00 Credit(s)
Students will write a research paper directed by a
department faculty member relevant to their
major. Required of all departmental majors.
Students should enroll in this course one quarter
before the quarter in which they expect to graduate.
Prerequisite: PLSC 488.
491 - SPECIAL TOPICS IN POLITICAL SCIENCE
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

495 - SEMINAR IN POLITICAL SCIENCE OR CRIMINAL JUSTICE
1.00 to 4.00 Credit(s)
Can be repeated as topic varies.

498 - INDEPENDENT STUDY IN POLITICAL SCIENCE, CRIMINAL JUSTICE OR INTERNATIONAL STUDIES
1.00 to 4.00 Credit(s)
Approval of department chairman required prior to registration.
DEPARTMENT OF
MATHEMATICS AND
COMPUTER SCIENCE

Professors Berton, R. Hovis (Chair), Lhamon, Putt, Shult; Associate Professors Boyadzhiev, Evans, Johns, Retterer, Roepke; Assistant Professors Hudak, Song; Lecturers Y. Dong, M. Hovis, J. Ludanyi

Mary Reichelderfer Chair of Mathematics and Computer Science established in 1983 from funds of the estate of Mary K. Werkman. The 1993-94 recipient of this chair is Khristo Boyadzhiev, associate professor of mathematics.

The department offers majors and minors in both mathematics and computer science as well as courses in mathematics, statistics, and computer science to complement almost all disciplines in the University. Students with primary major in the department may choose a general education program leading to either the bachelor of arts degree or the bachelor of science degree. In addition, the department cooperates with the Center for Teacher Education and Certification in program planning for certification for those desiring to teach at the secondary school level. Students should consult with the department in which they are considering a major to determine the best choice of courses in mathematics and computer science.

In general, the sequence 172-173 is designed for prospective elementary school teachers, 142-143 for social science and business students, 154-155-156 for life science students and 163-261-262-263 for students in engineering, the physical sciences, mathematics and computer science. Mathematics 272 should be of interest to students in many areas.

Mathematics 120 and 122 are designed for students who require or desire additional preparation in algebra (120) or trigonometry (122) before enrolling in other required mathematics courses. Mathematics 160, precalculus, is designed to provide a fast-paced review of the material contained in 120 and 122. The student who needs intensive skill development before taking calculus should take 120 and 122; the student who needs only a review should take 160.

Mathematics 105 is designed to meet the needs of students who, although otherwise well-prepared for college work, require remedial work in mathematics before beginning the mathematics required for their chosen major. Because it is a remedial course it carries credit neither toward graduation nor toward any major or minor. It does, however, count in the student’s load, rank and GPA calculation. Entrance into Mathematics 105 is determined by the departmental place-

ment test and requires permission of the department chair. Students whose ACT in mathematics is below 16 (SAT below 370) usually need to take this course before enrolling in any other mathematics course.

Students who want an introduction to computing should take either Introduction to Information Processing (CS 130), which is of general interest, or Introduction to Programming (CS 134). For a greater exposure to programming either the sequence 134-135 or 134-135-138 should be taken. Programming courses in FORTRAN (CS 230) and COBOL (CS 231) are also available.

All courses in the department which are to be counted toward a major or minor in either mathematics or computer science must be completed with a grade of "C" or better.

Mathematics

For the mathematics major, the student must complete the calculus sequence 163-261-262-263, Mathematics 272, 294, 311, 361, 380 or 381, 452, 492 and 493. In addition, the mathematics major must complete a sequence in any one of three areas: algebra (312), statistics (382), or analysis (453). Finally, the mathematics major must complete eight hours of mathematics electives at the 300/400 level.

Computer Science 134 is a required cognate course.

For a minor in mathematics, the student must complete 163-261-262-272-294 plus two additional courses (each four credit hours or more) in mathematics numbered 245 or higher for a total of at least 28 hours.

Students planning to pursue a graduate degree in mathematics should also take 312, 324, 363, and 453. Students interested in a career in the actuarial sciences should take 332, 381, 382, 461, and 462, as well as ECON 202-203 and ACCT 211-212 from the College of Business Administration.

Computer Science

For the computer science major, the student must complete the following computer science courses: 134, 135, 138, 234, 236, 330, 334, 338, 429, 430, and 434.

In addition, the computer science major is required to complete four courses (each four credit hours or more) in computer science electives with at least three at the 300/400 level. The computer science major must also complete the following cognates in mathematics: 163, 261, 272, 336, and 380.

For the computer science minor, the student must complete CS 134, 135, 138, and 234 or 236, followed by at least three additional courses (four credit hours or more each) in computer science. Two of these must be at the 300/400 level and the total of all hours for the minor must be at least 28.
Subject - Computer Science (CS)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning programs of study, University catalog and library.

130 - INTRODUCTION TO INFORMATION PROCESSING
4.00 Credit(s)
An introduction to the language, technology, techniques, and applications of information processing; a discussion of these topics and their place in the world of information; an introduction to the use of word processing, spread sheet and database management software.

134 - INTRODUCTION TO PROGRAMMING
4.00 Credit(s)
An introduction to problem solving and algorithm development using a block structured language. Design, code, debug, and document computer programs using techniques of good programming style.

135 - INTERMEDIATE PROGRAMMING
4.00 Credit(s)
Continued development of discipline in program design, in style and expression, in debugging and testing, especially for larger programs. Introduction to algorithm analysis. Introduction to basic concepts of string processing, recursion, internal search/sort methods, and simple data structures. Prerequisite: CS 134.

138 - PROGRAMMING ENVIRONMENTS
4.00 Credit(s)
Introduction to software tools and operating system utilities available under popular operating systems such as UNIX. Introduction to the basic features of a systems programming language such as "C". Libraries of source and object code will be utilized. Prerequisite: CS 135.

191 - SPECIAL TOPICS IN COMPUTER SCIENCE
1.00 to 3.00 Credit(s)

230 - FORTRAN PROGRAMMING
4.00 Credit(s)
An introduction to the FORTRAN 77 language with an emphasis on using it for problem solving in mathematics, science, and engineering. Not open to students who have credit for GE 230. Offered alternate years.

231 - INTRODUCTION TO COBOL
4.00 Credit(s)
An introduction to programming in COBOL with business applications. Offered alternate years.

234 - ASSEMBLY LANGUAGE PROGRAMMING
4.00 Credit(s)
Introduction to computer structure and machine language, assembly language programming, macros, program segmentation and linkage. Prerequisite: CS 138.

236 - INTRODUCTION TO COMPUTER ORGANIZATION
4.00 Credit(s)
Introduction to computer architecture; basic logic design. Prerequisite: CS 138.

238 - INTRODUCTION TO FILE PROCESSING
4.00 Credit(s)
Introduction to file processing environment; sequential and direct access file manipulation techniques. Prerequisite: CS 138.

291 - SPECIAL TOPICS IN COMPUTER SCIENCE
1.00 to 4.00 Credit(s)

330 - ORGANIZATION OF PROGRAMMING LANGUAGES
4.00 Credit(s)
Theoretical investigation of programming language constructs; illustration of construct implementation in popular programming languages. Offered alternate years. Prerequisite: CS 234.

331 - ADVANCED COBOL
4.00 Credit(s)
Through the use of the COBOL programming language students are exposed to file organizations. They are introduced to advanced file processing techniques and to the fundamentals of database management. Offered alternate years. Prerequisite: CS 231.

332 - OPERATIONS RESEARCH
4.00 Credit(s)
Introduction to optimal decision making in deterministic systems; linear programming model, simplex method and algorithms, primal and dual problem, sensitivity analysis, transportation and transshipment, assignment, shortest route, minimal spanning tree, maximal flow, PERT, game theory, and nonlinear programming. Prerequisite: MATH 272. (Also listed as MATH 332.)
334 - OPERATING SYSTEMS AND COMPUTER ARCHITECTURE 1
4.00 Credit(s)
Operating system principles; organization and architecture of computer systems at the register-transfer and programming levels of system development. Prerequisites: CS 234 and 236.

335 - OPERATING SYSTEMS AND COMPUTER ARCHITECTURE 2
4.00 Credit(s)
Continuation of CS 334. Offered alternate years. Prerequisite: CS 334.

338 - DATA STRUCTURES AND ALGORITHM ANALYSIS
4.00 Credit(s)
Basic techniques for the design and analysis of efficient algorithms for sorting, merging, searching and memory management. Prerequisite: CS 238.

341 - ARTIFICIAL INTELLIGENCE 1
4.00 Credit(s)
Introduction to artificial intelligence problems and techniques for their solution. Includes use of LISP, search algorithms, knowledge representation, expert systems, parsing language and language comprehension, learning. Offered alternate years. Prerequisite: Knowledge equivalent of 2 quarters of a programming language or consent of instructor.

342 - ARTIFICIAL INTELLIGENCE 2
4.00 Credit(s)
Continuation of CS 341. Offered alternate years. Prerequisite: CS 341.

345 - COMPUTER SIMULATION
4.00 Credit(s)
The nature of simulation, discrete event simulation, model structure, the process concept, the resource concept, performance measurements, the representation of time, random variables, entities, attributes, and sets. A modern discrete event simulation language such as Simscript II.5 will be used. Prerequisite: Knowledge of one programming language and basic statistics.

391 - SPECIAL TOPICS IN COMPUTER SCIENCE
1.00 to 4.00 Credit(s)

429 - SENIOR PROJECT DEFINITION
1.00 Credit(s)
An examination of the software life cycle and a discussion of software engineering methodologies. The goal of the course is to produce a problem definition that can be used as the basis for the CS 430 Senior Project course.

430 - SENIOR PROJECT IN COMPUTER SCIENCE
4.00 Credit(s)
An applications project conducted by student teams. Students will be responsible for the definition, design, and implementation of a software project. Students doing an off-campus project will be graded S/U.

434 - SOFTWARE ENGINEERING
4.00 Credit(s)
A study of methodologies used to design, create, evaluate and maintain software systems. The study includes coverage of several modern methodologies with emphasis on one. A course project written in a modern software development environment will be developed. Prerequisite: CS 135.

461 - NUMERICAL ANALYSIS 1
4.00 Credit(s)
Solution of equations in one variable; interpolation and polynomial approximation; direct methods for solution of linear systems. (Also listed as MATH 461.) Prerequisites: CS 138 or 230; MATH 262 and 272. Offered alternate years.

462 - NUMERICAL ANALYSIS 2
3.00 Credit(s)
Numerical differentiation and integration; initial value problems for ordinary differential equations; iterative techniques in matrix algebra. (Also listed as MATH 462.) Offered alternate years. Prerequisite: MATH 361.

470 - COMPUTER SCIENCE INTERNSHIP
3.00 to 12.00 Credit(s)
Analysis, design, coding, or testing of a software project. Normally achieved off-campus working for an industrial organization or government agency. Open to computer science majors who have completed eight quarters of work and have junior standing.

491 - SPECIAL TOPICS IN COMPUTER SCIENCE
1.00 to 4.00 Credit(s)

495 - SEMINAR IN COMPUTER SCIENCE
1.00 to 4.00 Credit(s)

498 - INDEPENDENT STUDY IN COMPUTER SCIENCE
1.00 to 4.00 Credit(s)
<table>
<thead>
<tr>
<th>Subject - Mathematics (MATH)</th>
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<tbody>
<tr>
<td><strong>000 - ORIENTATION</strong></td>
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<tr>
<td>1.00 Credit(s)</td>
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<tr>
<td>Familiarization with the department, requirements for majors planning programs of study, University catalog and library.</td>
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<tr>
<th><strong>105 - INTERMEDIATE ALGEBRA</strong></th>
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<tbody>
<tr>
<td>4.00 Credit(s)</td>
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<tr>
<td>Algebraic expressions and operations, equations and problem solving, special products and factoring, linear equations, simultaneous equations, exponents, radicals and graphs. For the student whose score on the mathematics placement exam indicates the need for a review of the fundamentals of algebra. Usually the student whose Math ACT is less that 16 should expect to take this course. CREDIT EARNED IN THIS COURSE DOES NOT SATISFY GRADUATION REQUIREMENTS FOR ANY PROGRAM OFFERED AT THE UNIVERSITY.</td>
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<tr>
<th><strong>120 - ELEMENTARY FUNCTIONS 1</strong></th>
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<tbody>
<tr>
<td>4.00 Credit(s)</td>
</tr>
<tr>
<td>The Real Number System. Polynomials. Equations and Inequalities. Functions and their Graphs. Polynomial and Rational Functions. Exponential and Logarithmic Functions. Not open for credit to students who have received a grade of C or higher in any Calculus course. Prerequisite: Two years of high school algebra and satisfactory performance on the mathematics placement examination.</td>
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<thead>
<tr>
<th><strong>122 - ELEMENTARY FUNCTIONS 2</strong></th>
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<tbody>
<tr>
<td>3.00 Credit(s)</td>
</tr>
<tr>
<td>Trigonometric functions, identities, solutions of triangles, complex numbers. Not open for credit to students who have received a grade of C or higher in MATH 163 or above. Prerequisite: MATH 120 or its equivalent.</td>
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<tr>
<th><strong>142 - PROBABILITY AND STATISTICS 1</strong></th>
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<tbody>
<tr>
<td>3.00 Credit(s)</td>
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<tr>
<td>Descriptive statistics, probability, binomial distribution, normal distribution, confidence intervals, hypothesis testing.</td>
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<thead>
<tr>
<th><strong>143 - PROBABILITY AND STATISTICS 2</strong></th>
</tr>
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<tbody>
<tr>
<td>3.00 Credit(s)</td>
</tr>
<tr>
<td>Chi-square tests, analysis of variance, non-parametric statistics, decision making under uncertainty, the classical time series model, index numbers; oriented toward business applications. Prerequisite: MATH 142 or equivalent.</td>
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<tr>
<th><strong>154 - INTRODUCTION TO CALCULUS 1</strong></th>
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<tbody>
<tr>
<td>4.00 Credit(s)</td>
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<tr>
<td>Concepts of differentiation and integration applied to algebraic, exponential, and logarithmic functions. Prerequisite: MATH 120 or equivalent.</td>
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<tr>
<th><strong>155 - INTRODUCTION TO CALCULUS 2</strong></th>
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<tbody>
<tr>
<td>4.00 Credit(s)</td>
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<tr>
<td>Additional topics in integration, functions of several variables, elementary differential equations, and probability. Prerequisite: MATH 154 or equivalent.</td>
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<tr>
<th><strong>156 - INTRODUCTORY DATA ANALYSIS</strong></th>
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<tr>
<td>4.00 Credit(s)</td>
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<tr>
<td>Basic statistical techniques with emphasis on the applications to biological sciences. Prerequisite: MATH 154 or equivalent.</td>
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<tr>
<th><strong>160 - PRE-CALCULUS MATHEMATICS</strong></th>
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<tr>
<td>5.00 Credit(s)</td>
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<tr>
<td>A fast-paced review of algebraic and trigonometric functions, including inverses, graphing, composition, etc. Intended for students requiring review before taking calculus. Not open for credit to students who have received a grade of C or higher in any calculus course or to any student with credit for MATH 120. Prerequisite: Two years of high school algebra and at least one-half year of trigonometry.</td>
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<tr>
<th><strong>163 - CALCULUS 1</strong></th>
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<tr>
<td>5.00 Credit(s)</td>
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<tr>
<td>Limit of a function, continuity, the derivative, extrema, curve plotting, Mean Value Theorem, applications of the derivative. Prerequisite: MATH 160 or equivalent.</td>
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<tr>
<th><strong>172 - FUNDAMENTAL MATHEMATICS 1</strong></th>
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<tbody>
<tr>
<td>5.00 Credit(s)</td>
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<tr>
<td>Problem solving skills and techniques, sets and structure, whole numbers, integers, rationals and reals, theory of arithmetic and introductory number theory. OPEN ONLY TO ELEMENTARY EDUCATION MAJORS.</td>
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<thead>
<tr>
<th><strong>173 - FUNDAMENTAL MATHEMATICS 2</strong></th>
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<tbody>
<tr>
<td>4.00 Credit(s)</td>
</tr>
<tr>
<td>Introduction to Microsoft Works, fundamentals of counting, probability and statistics. LOGO and turtle geometry, geometric figures, measurement, congruence, symmetry, constructions, transformations and similarity. OPEN ONLY TO ELEMENTARY EDUCATION MAJORS.</td>
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<tr>
<th><strong>190 - SPECIAL TOPICS IN MATHEMATICS</strong></th>
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<tbody>
<tr>
<td>1.00 to 3.00 Credit(s)</td>
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</table>
245 - HISTORY OF MATHEMATICS
4.00 Credit(s)
An introduction to the history and origin of
mathematics, restricted principally to mathemat-
ics through elementary calculus. A chronological
study of some mathematicians and their
contributions to mathematical thought. Offered
alternate years.

261 - CALCULUS 2
4.00 Credit(s)
The Fundamental Theorem of Calculus,
applications of the integral, the exponential
function and inverse functions, techniques of
integrations. Prerequisite: MATH 163.

262 - CALCULUS 3
4.00 Credit(s)
Sequences and series, Taylor series, polar
coordinates, parametric equations, conic
sections, vectors, planes and lines in space.
Prerequisite: MATH 261.

263 - CALCULUS 4
4.00 Credit(s)
Vector-valued functions, multivariate functions,
spherical and cylindrical coordinates, differential
calculus of multivariate functions, integral
calculus of multivariate functions. Prerequisite:
MATH 262.

272 - INTRODUCTION TO LINEAR ALGEBRA
4.00 Credit(s)
Vector space methods. Vector spaces over the
Reals, linear transformations and their matrices,
eigenvalues and eigenvectors. Applications.
Prerequisites: MATH 261 or consent of the
instructor.

290 - SPECIAL TOPICS IN MATHEMATICS
1.00 to 4.00 Credit(s)

294 - FOUNDATIONS OF MATHEMATICS
4.00 Credit(s)
Introduction to sets, logic and mathematical
proof; application of these concepts. Prerequi-
site: MATH 261.

301 - MATHEMATICS FOR SECONDARY
TEACHERS
4.00 Credit(s)
Includes topics related to number systems,
text of equations, functions, inequalities,
geometry, number theory, etc. Emphasis on
Euclidean geometry and LOGO and on
discussions of actual questions raised in a
secondary mathematics classroom, including
discussion of appropriate teaching tactics. THIS
COURSE WILL NOT COUNT TOWARD THE
MAJOR IN MATHEMATICS. Offered alternate
years. Prerequisite: MATH 294.

311 - ABSTRACT ALGEBRA 1
4.00 Credit(s)
Introduction to algebraic structures, groups, rings
and fields. Prerequisite: MATH 294.

312 - ABSTRACT ALGEBRA 2
4.00 Credit(s)
Continuation of MATH 311. Offered alternate
years.

324 - TOPOLOGY
3.00 Credit(s)
General point set topology and metric spaces.
Offered alternate years. Prerequisites: MATH
262 and 294.

332 - OPERATIONS RESEARCH
4.00 Credit(s)
Introduction to optimal decision making in
deterministic systems; linear programming
model, simplex method and algorithms, primal
and dual problem, sensitivity analysis, transpor-
tation and transshipment, assignment, shortest
route, minimal spanning tree, maximal flow,
PERT, game theory, and non-linear program-
ing. (Also listed as CS 332.)

336 - DISCRETE MATHEMATICS
4.00 Credit(s)
Introduction to and application of topics from
mathematics relevant to computer science;
combinatorics, relations, digraphs, trees, and
elementary algebraic structures. Offered
alternate years. Prerequisite: CS 135 and
MATH 272.

361 - DIFFERENTIAL EQUATIONS
5.00 Credit(s)
First order differential equations with applica-
tions; second order linear differential equations
with applications. Laplace transforms, systems
of first order equations. Prerequisites: MATH
262 and 272.

362 - PARTIAL DIFFERENTIAL EQUATIONS
4.00 Credit(s)
Fourier series, heat and wave equations,
boundary conditions of classical type, Sturm-
Liouville problem, series solution of ordinary
differential equations. Offered alternate years.
Prerequisite: MATH 361.

363 - COMPLEX VARIABLES
4.00 Credit(s)
Complex algebra, complex calculus, analytic
functions, infinite series over the complex plane,
text of residues, conformal mapping. Offered
alternate years. Prerequisite: MATH 263.
380 - STATISTICS FOR SCIENTISTS AND ENGINEERS
4.00 Credit(s)
Probability and its application to problems in mathematics, science and engineering; random variables and their distributions; estimation; hypothesis testing; linear regression; and analysis of variance. Topics in quality control. Prerequisite: MATH 261.

381 - STATISTICS 1
4.00 Credit(s)
Probability models, random variables, sampling estimation, hypothesis testing, non-parametric procedures, regression, and correlation. Prerequisite: MATH 263.

382 - STATISTICS 2
4.00 Credit(s)
Continuation of MATH 381.

390 - SPECIAL TOPICS IN MATHEMATICS
1.00 to 4.00 Credit(s)

421 - FOUNDATIONS OF GEOMETRY
4.00 Credit(s)
An axiomatic approach to geometry including the concepts of incidence, ordering, separation, and congruence in incidence, affine, Euclidean and non-Euclidean geometries. Prerequisite: MATH 294.

423 - PROJECTIVE GEOMETRY
3.00 Credit(s)
Projectivities, perspective triangles, quadrilateral sets, harmonic sets, duality, fundamental theorem and Pappus's Theorem, polarities, the conic, finite projective plane, parallelism, coordinates. Offered alternate years. Prerequisite: MATH 294.

452 - REAL ANALYSIS 1
4.00 Credit(s)
Basic set theory, algebraic and topological properties of real Cartesian spaces, sequences. Prerequisites: MATH 263 and 294.

453 - REAL ANALYSIS 2
4.00 Credit(s)
Continuous functions in real Cartesian spaces, theory of functions of one variable (differentiation and integration). Offered alternate years. Prerequisite: MATH 452.

461 - NUMERICAL ANALYSIS 1
4.00 Credit(s)
Solutions of equations in one variable, interpolation and polynomial approximation, direct methods for solution of linear systems. Offered alternate years. Prerequisites: CS 138 or MATH 230; MATH 262 and 272.

462 - NUMERICAL ANALYSIS 2
3.00 Credit(s)
Numerical differentiation and integration; initial value problems for ordinary differential equations; iterative techniques in matrix algebra. Offered alternate years. Prerequisite: MATH 361.

490 - SPECIAL TOPICS IN MATHEMATICS
1.00 to 4.00 Credit(s)

492 - SENIOR MATHEMATICAL EXPOSITION 1
1.00 Credit(s)
The student explores a topic in mathematics with faculty supervision. The student will do research for an expository paper. Graded S/U. Prerequisite: Consent of the instructor or department chairman.

493 - SENIOR MATHEMATICAL EXPOSITION 2
1.00 Credit(s)
Continuation of MATH 492. The student prepares an expository paper and gives a lecture on the paper. Prerequisite: MATH 492.

494 - SEMINAR IN MATHEMATICS
1.00 to 4.00 Credit(s)

497 - INDEPENDENT STUDY IN MATHEMATICS
1.00 to 4.00 Credit(s)
DEPARTMENT OF MUSIC

Professor E. Williams (Chair); Assistant Professors Bates, D’Arca, Kratzker, Zank; Instructors Adkins (on leave); Resident Artists Osbun, R. Williams; Lecturers Altaegetter, Beckett, Bidding, Dyke, Fisher, Folk, Gramm, Laukhuf, Nott, Sherrick, Suman, Wurgler, Zickafoose

The department of music offers a full course of music and music education studies for the aspiring music educator, composer, or professional performer. The department also serves the general university community through its course offerings, its performing groups which are open to all students, and through its many concerts, recitals, and other performances which enhance the cultural life and atmosphere of the university. Ohio Northern University is an accredited institutional member of the National Association of Schools of Music.

The music major is given a variety of courses and experiences to help him/her gain the knowledge and proficiency in breadth and depth which will help him/her achieve future success in his/her chosen area of endeavor in the music field. Special topics and studies may be undertaken to enrich the basic course offerings.

A variety of degree programs are offered: Bachelor of Music with majors in music education, performance, and composition; and Bachelor of Arts with a major in music. A minor in music is also offered. Specific degree requirements are listed below.

Bachelor of Music A candidate for the Bachelor of Music degree must complete the following general education requirements: First Year Experience; Fine Arts: an art course, COMM 211 or 225; Humanities: English 110, 111 and 204, Religion 105 or equivalent; Foreign Language: two quarters of any foreign language; Social Sciences: a course in Economics, Psychology, Sociology, or Political Science; Western Civilization 110-111; Mathematics and Natural Sciences: two courses from biology, mathematics or physical science. Also exposure to computer usage and at least one non-Western or third world course. All students are required to take three hours of physical education credit (see Department of Health, Physical Education and Sports Studies).

All majors include a basic musicality core of courses: 121, 122, 123, 131, 132, 133, 221, 222, 223, 231, 232, 233, 241, 311, 312, 313, 321, 322, 323, 342 and 343. Vocal majors also take diction 261, 262, 263.

A minimum of one major performing group is taken each quarter. Regular student recital performances and participation in performing group concerts provide continuous growth in musicianship. Special requirements for the individual majors within the Bachelor of Music are as follows:

The Bachelor of Music with a music education major requires 22 hours of applied private instruction, proficiency in piano and guitar; senior recital; music education courses 043, 334, 336, 338, 339, 461, and 462 (instrumental majors also take 463); and professional education courses 110, 150 twice, 225, 263, 285, 342, 459, 475, student teaching (one quarter), and field experience 300 hours.

The Bachelor of Music with a performance major requires an acceptance audition, piano proficiency, 36 hours of applied private instruction, applied field literature, ensemble, music electives, and junior and senior recitals.

The Bachelor of Music with a composition major requires 18 hours of music composition, 4 hours of electronic music and a 3 hour senior composition project. In addition, required supportive courses in music include Music 100, 241, 342, 343, 12 hours of a primary applied instrument, 6 hours of a secondary applied instrument, 6 hours of piano, 12 hours of ensemble and 18 hours of music electives.

Bachelor of Arts The candidate for the Bachelor of Arts degree must complete the bachelor of arts general education requirements listed earlier in this catalog. The major in music course sequence is comprised of Music 100, 121, 122, 123, 131, 132, 133, 221, 222, 223, 231, 232, 233, 321, 322, 323; a minimum of 12 hours of private applied instruction well distributed over the college years; a minimum of six quarters in a major performing group; eight hours of music electives, and a senior project.

All music majors are required to attend a specified number of recitals and concerts each quarter, registering for Music 001.

The advanced music section of the Graduate Record Examination (GRE) is the required senior comprehensive examination for all music majors. This exam must be taken before the last quarter of the senior year.

Teacher certification in music: vocal and instrumental, K-12, is acquired through the Bachelor of Music major in music education.

Double majors in music and another field, prelaw program with music major, inter-disciplinary programs, or double degree programs can be arranged. Contact the department chair for details.

A minor in music may be earned by taking a minimum of 33 hours which must include music 121, 122, 123, 131, 132, 133, 321, 322, 323; six quarters of private applied instruction in
one area and six quarters in a major performing group.

Applied Music Individual instruction is offered for varying hours of credit. Each music major generally takes two credit hours of individual instruction in his/her major applied area each quarter. Non-music majors and music majors studying minor applied areas usually register for one credit hour of class or individual instruction each quarter. Non-music and non-musical theatre majors are assessed an extra fee only for individual lessons, and the availability of these lessons is dependent upon the schedule and load of the instructor involved. Generally, one half hour of individual instruction is given for each hour of credit taken.

Subject - Applied Music and Performance (AMUS)

May be repeated on an unlimited basis by music majors, other students must check with their college dean for specific college requirements.

010 - VOICE CLASS
1.00 Credit(s)

015 - VOICE-INDIVIDUAL
1.00 to 3.00 Credit(s)

020 - PIANO CLASS
1.00 Credit(s)

021 - PIANO CLASS-MAJORS
1.00 Credit(s)

025 - PIANO-INDIVIDUAL
1.00 to 3.00 Credit(s)

026 - HARPSCICHORD-INDIVIDUAL
1.00 to 3.00 Credit(s)

030 - ORGAN CLASS
1.00 Credit(s)

035 - ORGAN-INDIVIDUAL
1.00 to 3.00 Credit(s)

040 - STRINGS CLASS
1.00 Credit(s)

041 - VIOLIN-VIOLA CLASS
1.00 Credit(s)

042 - CELLO-BASS CLASS
1.00 Credit(s)

043 - GUITAR-CLASS
1.00 Credit(s)

045 - VIOLIN-INDIVIDUAL
1.00 to 3.00 Credit(s)

046 - VIOLA-INDIVIDUAL
1.00 to 3.00 Credit(s)

047 - CELLO-INDIVIDUAL
1.00 to 3.00 Credit(s)

048 - DOUBLE BASS-INDIVIDUAL
1.00 to 3.00 Credit(s)

049 - GUITAR-INDIVIDUAL
1.00 to 3.00 Credit(s)

050 - WOODWIND CLASS
1.00 Credit(s)

055 - FLUTE-INDIVIDUAL
1.00 to 3.00 Credit(s)

056 - OBOE-INDIVIDUAL
1.00 to 3.00 Credit(s)

057 - CLARINET-INDIVIDUAL
1.00 to 3.00 Credit(s)

058 - BASSOON-INDIVIDUAL
1.00 to 3.00 Credit(s)

059 - SAXOPHONE-INDIVIDUAL
1.00 to 3.00 Credit(s)

060 - BRASS CLASS
1.00 Credit(s)

065 - TRUMPET-INDIVIDUAL
1.00 to 3.00 Credit(s)

066 - FRENCH HORN-INDIVIDUAL
1.00 to 3.00 Credit(s)

067 - TROMBONE-INDIVIDUAL
1.00 to 3.00 Credit(s)

068 - EUPHONIUM-INDIVIDUAL
1.00 to 3.00 Credit(s)

069 - TUBA-INDIVIDUAL
1.00 to 3.00 Credit(s)

070 - PERCUSSION CLASS
1.00 Credit(s)
Music Performing Groups

Membership in performing groups is open to all University students, and they are encouraged to participate. Students may enroll as many times as they wish; however, there are certain restrictions on the amount of ensemble credit which may count toward minimal graduation requirements in the College of Arts and Sciences. Requirements in fine arts may be satisfied by two to four years of membership in a major performing group.

May be repeated on an unlimited basis by music majors; other students must check with their college Dean for specific college requirements.

080 - CHORUS
1.00 Credit(s)
A large choral group open to all qualified students. Music of all types, accompanied and a cappella, is studied and sung throughout the year in concerts and performances on and off campus.

081 - CHAPEL CHOIR
1.00 Credit(s)
A choral group open to all students for the study and performance of sacred and traditional music. The Chapel Choir sings at chapel services and gives occasional concerts.

082 - ADDED ATTRACTION
1.00 Credit(s)
Select show choir of singer/dancers performing characteristic literature including Broadway, pop, vocal jazz and country-western. Performances include concerts on and off campus. Membership by audition.

083 - UNIVERSITY SINGERS
1.00 Credit(s)
A select group of men and women singers designed to perform a wide variety of choral literature with the highest musical standards. Performances include concerts on and off campus and on tour. Membership by audition.

084 - WIND ENSEMBLE
1.00 Credit(s)
A concert ensemble open to qualified students who play band instruments. A wide variety of band literature is studied and performed in regular campus concerts. Membership by audition.

085 - CHAMBER CHORALE
1.00 Credit(s)
A highly select choral ensemble specializing in the study and performance of music of the Renaissance and Baroque periods with the inclusion of both sacred and secular choral masterworks from Madrigals to Cantatas. Prerequisite: Permission of the instructor or audition.

086 - PEP BAND
1.00 Credit(s)
A band specially organized to provide music for athletic events.

087 - SYMPHONIC BAND
1.00 Credit(s)
A fully-instrumented concert ensemble studying and performing the finest band literature with the highest musical standards. Performances include concerts and programs on campus and tour concerts.

088 - JAZZ ENSEMBLE
1.00 Credit(s)
Selected ensembles for the study and performance of jazz and popular music. Performances on and off campus are scheduled throughout the year. Membership priority is given to members of symphonic and concert bands.

089 - OPERA WORKSHOP
1.00 to 3.00 Credit(s)
Instruction and experience in preparation for opera performance, including study of operatic literature and coaching of singers for specific roles in public performance of opera scenes and/or full staged operas. Prerequisite: Approval of the instructor or audition.

090 - MARCHING BAND
1.00 Credit(s)
A musical organization devoted to the preparation and performance of football game shows at home and selected away games. Open to all university students who play band instruments or who are accepted for auxiliary groups. Fall Quarter only. Includes a drill camp in advance of the Fall Quarter.

092 - WOODWIND ENSEMBLE
1.00 Credit(s)
Selected ensembles of woodwind instrumentalists for the study and performance of characteristic literature.

094 - BRASS ENSEMBLE
1.00 Credit(s)
Selected ensembles of brass instrumentalists for the study and performance of characteristic literature.
095 - PERCUSSION ENSEMBLE
1.00 Credit(s)
Selected ensembles of percussion players for the study and performance of characteristic literature.

096 - ORCHESTRA
1.00 Credit(s)
Credit may be earned for membership in the Lima Symphony Orchestra (by audition) and for orchestras on campus which perform for large choral works and the annual spring musical theater production.

098 - STRING ENSEMBLE
1.00 Credit(s)
Ensembles of string instrumentalists for the study and performance of characteristic literature.

099 - NEW MUSIC ENSEMBLE
1.00 Credit(s)
The rehearsal and performance of solo, chamber, and small ensemble music from the twentieth century. In addition, significant experimental music from previous centuries will be included. Emphasis will be on landmark works by major composers, and post-1960 music. Permission of the instructor.

110 - FUNDAMENTALS OF MUSIC FOR THE NON-MUSIC MAJOR
4.00 Credit(s)
Basic components of music. Designed to give the non-music major a background in the perception and reading of musical symbols. Includes listening experiences of representative literature and recognition of major composers. Permission of instructor is required.

121 - THEORY OF MUSIC 1
3.00 Credit(s)
Basic music theory and harmony, scales, intervals, chords, part-writing, creative projects in composition and arranging. Required of all freshmen music majors. Continuation courses must be taken in sequence.

122 - THEORY OF MUSIC 2
3.00 Credit(s)
Continuation of MUSC 121.

123 - THEORY OF MUSIC 3
3.00 Credit(s)
Continuation of MUSC 122.

131 - EAR TRAINING 1
1.00 Credit(s)
Sight-singing; melodic, rhythmic and harmonic dictation; keyboard harmony. Taught in a laboratory setting. Designed to supplement and to be taken in conjunction with first year of music theory studies. Must be taken in sequence. Level determined by proficiency.

132 - EAR TRAINING 2
1.00 Credit(s)
Continuation of MUSC 131.

133 - EAR TRAINING 3
1.00 Credit(s)
Continuation of MUSC 132.

190 - SPECIAL TOPICS IN MUSIC
1.00 to 3.00 Credit(s)

210 - JAZZ HISTORY AND LITERATURE
3.00 Credit(s)
An in-depth study of modern jazz, from its roots in African tribal music through the gradual evolution of this American art form as it appears today.

211 - ELECTRONIC MUSIC
2.00 Credit(s)
The study of history, development, materials, and techniques of electronic music. Emphasis on composition in the medium. Concentration of classical (tape recorder) techniques and use of synthesizer. Work in the electronic laboratory. Prerequisite: Permission of the instructor.
221 - ADVANCED THEORY OF MUSIC 1
3.00 Credit(s)
Continuation of MUSC 123. Study of 18th, 19th and 20th century compositional techniques. Development of analytical skills. Creative projects in composition. Continuation courses must be taken in sequence. Prerequisite: MUSC 123.

222 - ADVANCED THEORY OF MUSIC 2
3.00 Credit(s)
Continuation of MUSC 221.

223 - ADVANCED THEORY OF MUSIC 3
3.00 Credit(s)
Continuation of MUSC 222.

231 - ADVANCED EAR TRAINING 1
1.00 Credit(s)
Continuation of MUSC 131, 132 and 133. Designed to supplement and to be taken in conjunction with second year of music theory. Prerequisite: MUSC 133 or proficiency.

232 - ADVANCED EAR TRAINING 2
1.00 Credit(s)
Continuation of MUSC 231.

233 - ADVANCED EAR TRAINING 3
1.00 Credit(s)
Continuation of MUSC 232.

241 - BASIC CONDUCTING
2.00 Credit(s)
General conducting techniques and principles of score study. Laboratory experiences. Continuation courses must be taken in sequence. Prerequisite: MUSC 121.

261 - LATIN AND ITALIAN DICTION FOR SINGERS
1.00 Credit(s)
Designed to acquaint vocalists with the proper pronunciation of vocal and choral texts in Latin and Italian. Required of all vocal music majors.

262 - FRENCH DICTION FOR SINGERS
1.00 Credit(s)
Continuation of MUSC 261 in French.

263 - GERMAN DICTION FOR SINGERS
1.00 Credit(s)
Continuation of MUSC 262 in German.

280 - PIANO PROFICIENCY
.00 Credit(s)

290 - SPECIAL TOPICS IN MUSIC
1.00 to 3.00 Credit(s)

310 - AMERICAN MUSIC
4.00 Credit(s)
An investigation of sacred and secular American music from colonial America to the present with particular attention to native art music and the incorporation of jazz into symphonic works of the 20th century.

311 - COUNTERPOINT
2.00 Credit(s)
Polyphonic music in various styles with particular emphasis on that of the eighteenth century. Creative projects in contrapuntal writing. Prerequisite: MUSC 223.

312 - FORM AND ANALYSIS
2.00 Credit(s)
The evolution of musical forms and styles from the Baroque to the present. Theoretical and stylistic analysis of representative music. Prerequisite: MUSC 223.

313 - ORCHESTRATION
2.00 Credit(s)
The instruments of the band and orchestra. Arrangements for the band and orchestra. Arrangements for string, woodwind and brass combinations. A study of orchestrations by romantic, classical, and modern composers. Prerequisite: MUSC 223.

314 - MUSIC COMPOSITION
3.00 Credit(s)
Study of principles general to all compositional styles, and application of these principles through weekly composition projects. Includes work in the electronic music laboratory. In class performances. Prerequisite: Permission of the instructor.

321 - MUSIC HISTORY AND LITERATURE 1
3.00 Credit(s)
The historical development of music literature. Study of representative literature and composers: Ancient, Medieval and Renaissance periods. Prerequisite: MUSC 100.

322 - MUSIC HISTORY AND LITERATURE 2
3.00 Credit(s)
Study of the Baroque and Classical periods. Prerequisite: MUSC 100.

323 - MUSIC HISTORY AND LITERATURE 3
3.00 Credit(s)
Study of the Romantic and Twentieth Century periods. Prerequisite: MUSC 100.
334 - WOODWIND METHODS
2.00 Credit(s)
Study, elementary performance skills, pedagogy, and materials of the woodwind instruments. For future school music teachers.

336 - BRASS METHODS
2.00 Credit(s)
Study, elementary performance skills, pedagogy, and materials of the brass instruments. For future school music teachers.

338 - PERCUSSION METHODS
2.00 Credit(s)
Study, elementary performance skills, pedagogy, and materials of the percussion instruments. For future school music teachers.

339 - STRING METHODS
2.00 Credit(s)
Study, elementary performance skills, pedagogy, and materials of the orchestral stringed instruments. For future school music teachers.

342 - ADVANCED CONDUCTING - INSTRUMENTAL
2.00 Credit(s)
Further development of baton techniques and other conducting skills relating to practice, reading and preparation of scores for working with instrumental ensembles. (Formerly MUSC-242). Prerequisite: MUSC 241.

343 - ADVANCED CONDUCTING - CHORAL
2.00 Credit(s)
Adaptation of basic conducting techniques to the choral ensemble, including leadership, error detection, tonal development, stylistic accuracy and analysis. Exploration of choral philosophy and development. (Formerly MUSC-341.) Prerequisite: MUSC 241.

371 - APPLIED FIELD LITERATURE-PEDAGOGY 1
1.00 Credit(s)
Study of the professional and educational literature in a specific applied field.

372 - APPLIED FIELD LITERATURE-PEDAGOGY 2
1.00 Credit(s)
Continuation of MUSC 371.

373 - APPLIED FIELD LITERATURE-PEDAGOGY 3
1.00 Credit(s)
Continuation of MUSC 372.

380 - JUNIOR RECITAL
.00 Credit(s)

390 - SPECIAL TOPICS IN MUSIC
1.00 to 3.00 Credit(s)

411 - ADVANCED ELECTRONIC MUSIC COMPOSITION
2.00 Credit(s)
Advanced study and creative work in the area of electronic music. The focus will be upon advanced synthesis, recording and notational techniques as they relate to student's creative efforts. Relevant historical topics and a survey of the electronic music literature will be included.

461 - SECONDARY CHORAL METHODS AND TECHNIQUES
3.00 Credit(s)
Procedures in the development and direction of school choral groups, including choral literature of all types. Includes approximately 20 hours of field experience. Prerequisite: Admission to Teacher Education Program or approval of the director of Teacher Education.

462 - SECONDARY INSTRUMENTAL METHODS AND TECHNIQUES
3.00 Credit(s)
Procedures in the development and direction of school bands and orchestras, including band literature of all types. Includes approximately 20 hours of field experience. Prerequisite: Admission to the Teacher Education Program or approval of the director of Teacher Education.

463 - MARCHING BAND METHODS AND TECHNIQUES
2.00 Credit(s)
Methods, materials, and techniques in the development and direction of the marching band. Show planning, precision drill, rehearsal techniques, and selection and rehearsal of music. Membership in Marching Band required in conjunction with class. Includes approximately 8 hours of field experience.

480 - SENIOR RECITAL
.00 Credit(s)

490 - SPECIAL TOPICS IN MUSIC
1.00 to 3.00 Credit(s)
Group study of approved specialized topics not offered in catalog.

497 - INDEPENDENT STUDY IN MUSIC
1.00 to 3.00 Credit(s)
A wide variety of specialized musical subjects are available through individual study with a faculty member.
DEPARTMENT OF PHILOSOPHY AND RELIGION

Professors Beanblossom, Hinderliter, Lenssen (Chair); Assistant Professor Person

The orientation of the department is non-sectarian and reflects a serious commitment to the academic study of philosophy and religion within the liberal arts tradition. Recognizing that both philosophy and religion, as academic disciplines, are concerned with basic questions of meaning and value in human life and with historical approaches to those questions, the department offers a range of general and specialized courses designed to broaden the educational experience of all undergraduate students at Ohio Northern. Students wishing a more concentrated study of philosophy and religion may choose to major or minor in the department.

General Education Requirements in philosophy and religion for the College of Arts and Sciences may be met by any course offered in the appropriate discipline (except for Philosophy 234 which does not count toward the philosophy requirement). 100-level courses are available to all students. 200-level courses require at least sophomore standing and 300 or 400-level courses require at least junior standing.

Philosophy Major The major in philosophy requires a minimum of 44 quarter hours beyond Philosophy 100, including the following courses: 234, two of the following (237, 238, 340), two courses in the history of philosophy (102, 331, 343, 347, 371, 374), and either 480 or 483. A maximum of three courses in religion may be applied to the philosophy major.

Religion Major The major in religion requires a minimum of 44 quarter hours beyond religion 105 and must include either 481 or 484. A maximum of three courses in philosophy may be applied to the religion major.

Philosophy and Religion Major The major in philosophy and religion requires a minimum of 44 quarter hours beyond philosophy 100 and religion 105. Selection of courses is subject to approval by the department and must include 480 or 481 or else 483 or 484.

It is recommended that majors in the department who plan to attend graduate or theological school or seminary take two years of foreign language.

Minor Programs Minors are offered in both philosophy and religion. A minimum of 28 hours is required with the selection of courses subject to approval by the department. Contact the department chair for further information about these programs.

Prelaw Program The department cooperates with the Pettit College of Law in the "guaranteed admission" prelaw program (see elsewhere in this catalog). Information about the curricular requirements of the program can be secured from the department chair.

Pretheology A faculty member in the department of philosophy and religion serves as advisor to the pretheological student in planning a preprofessional program. The recommendations of the American Association of Theological Schools are followed in counseling the student. A major in the department of philosophy and religion or in another appropriate department may be selected.

Philosophy

Philosophy is a quest for a comprehensive understanding of human existence. The objective of philosophy is to consider the rational justification of logical inferences, human values, criteria for establishing the claims of knowledge and certainty, and interpretations of the nature of reality. The diverse insights of significant philosophers from ancient times to the present contribute resources to stimulate contemporary philosophical thinking in each of these areas.

A major in philosophy prepares students generally for careers in areas which require the ability to analyze problems and to think and write clearly. It is an appropriate major for students planning to continue their education for professional careers such as law, medicine, and theology.

Subject - Philosophy (PHIL)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning program of courses, University catalog and library.
100 - PHILOSOPHY
4.00 Credit(s)
An introduction to philosophical inquiry, its scope and methodology, through a study of representative philosophical problems such as the nature of ethical values, principles of correct reasoning, the possibility and limits of knowledge, and the distinction between appearance and reality.

102 - GREAT PHILOSOPHERS
4.00 Credit(s)
An introduction to philosophical inquiry, its scope, methodology, and persistent problems through a study of major philosophers from Bacon to James, including such thinkers as Descartes, Hobbes, Locke, Hume and Kant.

190 - SPECIAL TOPICS IN PHILOSOPHY
1.00 to 4.00 Credit(s)
May be repeated for credit, depending on content.

325 - PHILOSOPHY OF RELIGION
4.00 Credit(s)
Critical inquiry into issues such as the nature and existence of God, the problem of evil, the significance of religious experience, the justification of religious belief, the relation of faith and reason. (Also listed as RELG 325.)

331 - PLATO AND ARISTOTLE
4.00 Credit(s)
A study of the Greek philosophers, Plato and Aristotle, against the background of the Pre-Socratics and Socrates.

336 - ETHICS IN PROFESSIONAL LIFE
4.00 Credit(s)
An examination of ethical behavior with emphases on ethical theories and their rational justification, on such problems as relativism and why be moral, and on resolving issues as they arise in case studies from engineering, business, and health care.

340 - THEORIES OF BEING
4.00 Credit(s)
An examination of theories of being with reference to problems such as reality, existence, essence, nature and their implications for knowledge and values.

341 - AESTHETICS
4.00 Credit(s)
An examination of classical and contemporary theories of art and aesthetic experience. Consideration of the nature of various arts and of issues such as meaning, truth, and value in art.

343 - AMERICAN PHILOSOPHY
4.00 Credit(s)
Main currents in American philosophy, including representative thinkers in such traditions as Puritanism, Transcendentalism, Pragmatism, and Realism.

345 - EXISTENTIALISM
4.00 Credit(s)
The historical roots of existentialism in Kierkegaard and Nietzsche, and the thought of representative writers such as Heidegger, Sartre, Camus, Dostoyevsky and Kafka.

347 - MEDIEVAL THOUGHT
4.00 Credit(s)
The development of theological and philosophical thought from 500 A.D. to 1350 A.D. (Also listed as RELG 347.)
371 - MAJOR PHILOSOPHICAL MOVEMENTS
4.00 Credit(s)
A study of the writings of a major, distinctive philosophical school of thought or period such as Idealism, Utilitarianism, Continental Rationalism, British Empiricism. To be offered every other year or on demand. May be repeated for credit, depending upon content.

374 - MAJOR PHILOSOPHERS
4.00 Credit(s)
A study of the thought and important writings of a single philosopher, or a pair or triad of philosophers such as Augustine, Descartes, Mill, Hume and Kant, Hegel and Marx. To be offered every other year or on demand. May be repeated for credit, depending upon content.

390 - SPECIAL TOPICS IN PHILOSOPHY
1.00 to 4.00 Credit(s)
May be repeated for credit, depending on content.

394 - SEMINAR IN PHILOSOPHY
1.00 to 4.00 Credit(s)
May be repeated for credit, depending on content.

480 - PHILOSOPHY SENIOR ESSAY
4.00 Credit(s)
A critical essay on a topic selected in consultation with a faculty advisor. The student enrolls for this course in the quarter during which the paper is to be completed. However, preliminary work on this project commences no later than the beginning of the senior year. (For majors only.)

483 - PHILOSOPHY SENIOR HONORS ESSAY
4.00 Credit(s)
Open to students with at least a 3.5 cumulative GPA in their Philosophy or Philosophy and Religion major. The student enrolls for this course in the quarter during which a critical essay is to be completed on a topic selected in consultation with a faculty advisor. However, preliminary work on this project commences no later than the beginning of the senior year.

497 - INDEPENDENT STUDY IN PHILOSOPHY
1.00 to 4.00 Credit(s)
Departmental permission required. May be repeated for credit, depending on content.

Religion

Religion is an integral part of human life and culture. It includes the ultimate commitments, attitudes, beliefs and forms of worship by which people live and find meaning for their personal and social existence. The courses in religion are intended to acquaint the student with the living religious traditions, primarily of the West, through an examination of their origins and development, their interaction with the changing cultural context, and their insights for dealing with the perennial questions of human existence and destiny. The approach to the study is ecumenical and makes use of current scholarly methods of research and findings.

Subject - Religion (RELG)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning program of courses, University catalog and library.

105 - RELIGION
4.00 Credit(s)
An exploration of the religious dimension of the human search for personal identity, meaningful existence, and ultimate reality, through the examination of various aspects and expressions of the religious life of humanity.

107 - RELIGIONS EAST AND WEST
4.00 Credit(s)
An introduction to representative major religions of the world, their origins, sacred writings, basic beliefs, and life practices, with special attention to non-Western religious traditions.

108 - INTRODUCTION TO CHRISTIANITY
4.00 Credit(s)
A study of the major teachings, practices and institutional forms of Christianity in their historical and contemporary settings.

109 - INTRODUCTION TO THE OLD TESTAMENT
4.00 Credit(s)
Critical reading of the Old Testament (the Hebrew Bible): its historical background, literary features, and theological claims.
383 - READINGS IN HELLENISTIC GREEK
1.00 Credit(s)
Assigned readings in the Greek New Testament and other Hellenistic Greek literature. Offered on demand. May be repeated for credit each quarter. Prerequisite: RELG 283.

391 - SPECIAL TOPICS IN RELIGION
1.00 to 4.00 Credit(s)
May be repeated for credit, depending on content.

395 - SEMINAR IN RELIGION
1.00 to 4.00 Credit(s)
May be repeated for credit, depending on content.

463 - LIFE AND TEACHINGS OF ST. PAUL
4.00 Credit(s)
The insights of the most influential thinker and apostle in the early church.

481 - RELIGION SENIOR ESSAY
4.00 Credit(s)
A critical essay on a topic selected in consultation with a faculty advisor. The student enrolls for this course in the quarter during which the paper is to be completed. However, preliminary work on this project commences no later than the beginning of the senior year. (For majors only.)

484 - RELIGION SENIOR HONORS ESSAY
4.00 Credit(s)
Open to students with at least a 3.5 cumulative GPA in their Religion or Philosophy and Religion major. The student enrolls for this course in the quarter during which a critical essay is to be completed on a topic selected in consultation with a faculty advisor. However, preliminary work on this project commences no later than the beginning of the senior year.

498 - INDEPENDENT STUDY IN RELIGION
1.00 to 4.00 Credit(s)
Departmental permission required. May be repeated for credit, depending on content.

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DEPARTMENT OF PHYSICS

Professor Gangemi (Chair); Associate Professors Johnson, Messick, Roll.

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 vocational value.

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 schools; to apply physics in engineering, medicine, and other sciences; and to pursue graduate work.

Ohio Northern University offers both the bachelor of arts degree and the bachelor of science degree with majors in physics.

The physics major who desires the bachelor of arts degree in addition to satisfying any requirement for that degree mandated by the Ohio Northern University College of Arts and Sciences must complete 56 hours in the major field. The required courses are: Freshman Seminar (000-000), Physics 231, 232, 233, 234, 235, 236, 252, 303, 351, 352, 360, 411, 412, four hours from the Advanced Laboratory, Physics 300, and eight hours from among Physics 413, 432, 433, or 364.

The physics major who desires the bachelor of science degree, in addition to satisfying any requirements for that degree mandated by the Ohio Northern University College of Arts and Sciences, must complete 56 hours in the major field. The required courses are: Freshman Seminar (000-000), Physics 231, 232, 233, 234, 235, 236, 303, 351, 352, 360, 361, 411, 412, four hours from the Advanced Laboratory, Physics 300, and eight hours from among Physics 353, 413, 432, 433, or 364.

A comprehensive examination is not required for either the Bachelor of Arts or the Bachelor of Science degree.

The candidate for the Bachelor of Science or the Bachelor of Arts degree with a major in physics will be required to make a presentation describing some experimental project undertaken or some theoretical work pursued. This presentation will serve as a capstone to the work completed as an undergraduate with a major in physics. Some flexibility in this requirement will be permitted, dependent upon the candidate's interests and the facilities available. The presentation will be made during the last quarter.
of the senior year to the physics faculty, physics majors and any other interested students and faculty. Credit for Physics 490 will indicate that this requirement has been satisfied. This course will be graded on an S/U basis.

The physics department also offers a minor in physics. The student desiring to complete the requirements for the physics minor must complete 39 hours. The required courses are Physics 231, 232, 233, 234, 235, 236, 351, 352, 411, 412, and two advanced physics courses approved by the chair of the physics department.

In addition to the major and minor in physics, the department of physics also offers a program leading to certification for teaching in the Ohio public schools. The program is designed for the student whose goal is to teach physics in the high schools and will include 51 hours chosen to satisfy Ohio state certification requirements and, to a limited extent, the personal interests of the student. Although some flexibility is permitted, the courses taken in this program are chosen in consultation with the chair of the department of physics and will depend upon the completion of any necessary prerequisites.

This program differs from the major in physics in that the student desiring certification for teaching must also be registered in the Center for Teacher Education and Certification and satisfy all requirements as determined by the state of Ohio and the Center for Teacher Education and Certification of Ohio Northern University. A detailed description of these requirements can be obtained from the director of the Center for Teacher Education and Certification.

Substitution for courses specified in the Bachelor of Arts, Bachelor of Science, minor in physics, and teacher certification programs may be made with the approval of the chair of the department of physics.

Some of the courses listed below contain material which is similar but treated at different levels. Consequently, credit for both Physics 211 and 231, or 212 and 232, or 213 and 233 cannot be given toward satisfying minimum program requirements. Further, the department chair, in consultation with the registrar and dean of the College of Arts and Sciences, will evaluate transcripts from students who transfer to Ohio Northern University with physics courses from other institutions. Suitable credit will be awarded as appropriate.

Subject - Physics (PHYS)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors' programs, University catalog and library. Required of departmental majors. Offered every year in the Fall Term.

100 - PHYSICS
4.00 Credit(s)
Elementary presentation of classical mechanics, heat, atomic and nuclear physics. Issues involving science and society will also be considered. Available for credit for non science majors in the College of Arts and Sciences, and students enrolled in the College of Business Administration. In special circumstances, others may enroll in this course for credit with permission of the department chair.

101 - PHYSICAL AND EARTH SCIENCES - ELEMENTARY EDUCATION MAJORS
4.00 Credit(s)
The first of a three-term integrated sequence of physics, earth, and life science. An investigation of the nature of matter and energy and of their interactions as an introduction to the fundamental principles comprising the disciplines of physics and chemistry. Attention is given to the expression of these principles in everyday experience and technology. Science teaching methods will be included. Prerequisite: MATH 173.

211 - GENERAL PHYSICS: MECHANICS OF SOLIDS AND FLUIDS
3.00 Credit(s)
Basic principles of Newtonian mechanics of solids and liquids. The laboratory corresponding to this course is PHYS 234. Offered every year in the Fall Term.

212 - GENERAL PHYSICS: SOUND, HEAT, AND LIGHT
3.00 Credit(s)
Basic principles of sound propagation, heat and heat transfer, and light propagation. The laboratory corresponding to this course is PHYS 235. Offered every year in the Winter Term.

213 - GENERAL PHYSICS: ELECTRICITY AND MAGNETISM
3.00 Credit(s)
Basic principles of electrical and magnetic phenomena. The laboratory corresponding to this course is PHYS 236. Offered every year in the Spring Term.
360 - QUANTUM MECHANICS
4.00 Credit(s)

361 - ELECTRONICS
4.00 Credit(s)
Theory of solid state devices, rectifier circuits, transistor amplifiers, oscillators and modulators, instrumentation applications. Offered every year in the Fall Term. Prerequisite: PHYS 213 or 233, 234, 236 and MATH 363.

364 - OPTICS
4.00 Credit(s)
The laws of geometrical and physical optics. Image formation by mirrors and lenses and optical aberrations. Interference and diffraction. Part of the physics major program and offered when needed. Prerequisites: PHYS 231, 232 and 233. (Formerly PHYS 363 and 463.)

411 - ELECTRICITY AND MAGNETISM 1
4.00 Credit(s)
Electrostatic field theory, capacitance, multipole expansion, dielectric properties of matter; magnetic field theory; electromagnetic induction; magnetic properties of matter; Maxwell's equations and electromagnetic waves. Part of the Physics major program and offered when needed. Prerequisites: MATH 361 and PHYS 233.

412 - ELECTRICITY AND MAGNETISM 2
4.00 Credit(s)
Advanced electric and magnetic fields; electric and magnetic properties of solids, electromagnetic radiation. Part of the Physics major program and offered when needed. Prerequisites: MATH 362 and PHYS 411.

413 - SOLID STATE
4.00 Credit(s)
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. Part of the Physics program and offered when needed. Prerequisite: PHYS 303.

432 - STATISTICAL PHYSICS
4.00 Credit(s)

433 - THEORETICAL PHYSICS
4.00 Credit(s)
For students intending advanced work in physics, chemistry or mathematical physics. Selected topics in classical mechanics, electromagnetic theory, quantum theory, relativity, nuclear theory, and statistical mechanics. Part of the Physics major program and offered when needed. Prerequisites: MATH 362 and PHYS 412.

490 - SPECIAL TOPICS IN PHYSICS
1.00 to 3.00 Credit(s)
Part of the Physics major program and offered when needed.

497 - INDEPENDENT STUDY
1.00 to 3.00 Credit(s)
Part of the Physics major program and offered when needed.
DEPARTMENT OF
PSYCHOLOGY AND
SOCIOLOGY

Professors Compton, Cohoe, P. Hruschka, Wildman (Chair); Associate Professor McGucken

The objectives of the department are to develop within each student an understanding of human relationships, institutions, and social processes; familiarity with the nature and causes of social problems; acquaintance with the theories of behavior; ability to think more critically and to integrate insights for useful participation in community life; and preparation for advanced study in the individual's selected field.

Prelaw with Psychology and Sociology Study in the behavioral sciences provides an especially suitable background for prelaw students. The department, in cooperation with the College of Law at Ohio Northern University, offers a formal prelaw program with "guaranteed admission" to the law school. Detailed information appears on page 33 of this catalog.

The program requires specially selected electives. Specific curricular requirements are available from the department chair.

Secondary Certification Secondary teacher certification programs are offered in psychology/sociology, and comprehensive social studies. Information on these programs is available from the department chair or the Center for Teacher Education and Certification.

Course Numbering Code To simplify identification of courses in the department the following numbering code is used:
1st Digit—Level (1st year, 2nd year, etc.)
2nd Two digits—discipline:
0—multi-discipline (except for 100,105)
10's, 20's, 30's—psychology
40's, 50's—sociology
90's—special topics, independent study
Examples:
141—1st year, sociology
335—3rd year, psychology

Field Work, Externships and Practica The department offers a number of opportunities for out-of-class learning through field work, externships and practica. See the department chairman for details and eligibility requirements.

Careers in the Behavioral Sciences The study of the various behavioral sciences provides preparation for entry into a number of different job opportunities. Consult with department faculty to explore various career options.

Psychology

The psychology core is required for both the major and minor in psychology:

Core
1. Psychology 100
2. Psychology 111
3. Psychology 210
4. Psychology 211
5. Biology 121
6. Math 142

For the major
1. Psychology 000
2. The Psychology Core
3. 32 hours of Psychology Electives
4. Biology 123 & 231 or 2 approved mathematics courses

For the minor
1. The Psychology Core
2. 16 hours of psychology electives

Subject - Psychology and Sociology (PSSC)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the departmental requirements for majors, planning programs of courses, University catalog and library; career options.

301 - SOCIAL PSYCHOLOGY
4.00 Credit(s)
The effect of social and cultural forces upon the individual. The nature and development of attitudes, languages, cognitive processes. Individual and group projects illustrative of the methodology of social psychology. Prerequisite: PSYC 100.
000 - ORIENTATION
1.00 Credit(s)
Familiarization with the departmental requirements for majors, planning programs of courses, University catalog and library; career options.

100 - PSYCHOLOGY
4.00 Credit(s)
General research and concepts in human behavior. Lectures, demonstrations, and observations.

111 - INTRODUCTORY LABORATORY
2.00 Credit(s)
Experiments which demonstrate basic psychological principles and acquaint the student with laboratory procedures and report writing. Usually to be taken concurrently with PSYC 100, but can be taken later. Required for Psychology majors, optional for other students enrolled in PSYC 100.

210 - EXPERIMENTAL PSYCHOLOGY 1
4.00 Credit(s)
An introduction to the logic of experimental research and the application of the methods of science to the study of behavior. Particular emphasis on framing empirically testable hypotheses, experimental design, and analysis of data. Taught through lecture, computer simulation, and actual research experience. Extensive instruction in scientific communication and the APA Publications Manual. Prerequisites: MATH 142 and PSYC 100 and 111.

211 - EXPERIMENTAL PSYCHOLOGY 2
4.00 Credit(s)
Continuation of PSYC 210.

212 - PRINCIPLES OF BEHAVIOR MANAGEMENT
4.00 Credit(s)
The theory and supporting research which underlie behavior modification. Taught through lecture and laboratory demonstrations. Prerequisite: PSYC 100.

215 - DEVELOPMENTAL PSYCHOLOGY
4.00 Credit(s)
Basic theories in human development from conception through old age; contemporary research at each age level. Prerequisite: PSYC 100.

218 - PSYCHOLOGY OF THE EXCEPTIONAL CHILD
4.00 Credit(s)
The study of the atypical child. Diagnosis and treatment of disorders of infancy, childhood and adolescence. Prerequisite: PSYC 100.

226 - HUMAN SEXUAL BEHAVIOR
4.00 Credit(s)
The course will draw heavily on research literature in an attempt to provide students with an understanding of what is known (as well as what is not known) about the major facets of human sexual behavior. Prerequisite: PSYC 100.

301 - SOCIAL PSYCHOLOGY
4.00 Credit(s)
The effect of social and cultural forces upon the individual. The nature and development of attitudes, languages, cognitive processes. Individual and group projects illustrative of the methodology of social psychology. Prerequisite: PSYC 100.

311 - PSYCHOLOGY OF PERSONALITY
4.00 Credit(s)
The major theories of personality from Freud to contemporary theoretical approaches. Prerequisite: PSYC 100.

312 - PSYCHOLOGICAL ASSESSMENT
4.00 Credit(s)
The study of psychological measurement and evaluation in the areas of intelligence tests, tests of separate abilities, and personality inventories. Experience will be gained in test administration, scoring and interpretation. Prerequisite: PSYC 100.

315 - LEARNING THEORY AND RESEARCH
4.00 Credit(s)
The major theories of learning and major empirical issues and findings related to classical and instrumental conditioning. Current research in learning is covered on both the animal and human level.

320 - PSYCHOLOGY AND THE LAW
4.00 Credit(s)
A review of the role of the psychologist in civil commitment procedures, the insanity defense, patient’s rights, the determination of competency, and testifying as an expert witness. An examination of: significant court cases involving psychology and the law, research in the areas of jury selection, eye witness testimony and psychologists’ licensing procedures. Prerequisite: PSYC 100.
335 - PHYSIOLOGICAL PSYCHOLOGY
4.00 Credit(s)
Psychology as a biological science. Physiological events underlying behavior, including sensory, neural, and glandular involvement in such topics as motivation, emotion, and learning. Prerequisite: PSYCH 100 and BIOL 231 or 331.

394 - JUNIOR SEMINAR
1.00 Credit(s)
A professional preparation seminar for psychology majors. Discussion of career options, graduate school admissions, resume writing, placement services, GRE, practicum and other topics of importance to students entering their senior year. Prerequisites: Junior status; only psychology majors.

420 - ABNORMAL PSYCHOLOGY
4.00 Credit(s)

426 - PRACTICUM IN PSYCHOLOGY
8.00 to 16.00 Credit(s)
A field experience in the area of psychology. Open to seniors. Prerequisite: Approval of chairman.

434 - HISTORY AND SYSTEMS OF PSYCHOLOGY
4.00 Credit(s)
An overview of the major lines of thinking which have influenced the field of psychology beginning with ancient Greek philosopher-scientists to the twentieth century. Emphasis is given to theories of Empiricism, Associationism, and Scientific Materialism as well as twentieth century schools of psychological thought. Prerequisite: PSYC 100.

497 - INDEPENDENT STUDY IN PSYCHOLOGY
1.00 to 4.00 Credit(s)
Prerequisite: Approval of chairman.

Sociology

A minor in sociology consists of the following requirements:
1. Sociology 105
2. Sociology 251
3. Sociology 252
4. Sociology 446
5. Math 142
6. Additional sociology courses totaling 12 hours, selected in consultation with a member of the sociology faculty.

Sociology and the American Sociological Association Outstanding students with sophomore or junior standing are encouraged to participate in this special program of independent study. In the first phase of the program, each student reads independently during the summer on a selected topic. In the second phase, the student attends the annual meeting of the American Sociological Association to hear reports of current research, to attend business sessions of the Association, and to learn about career opportunities in sociology. In the third phase, the student writes a paper on the topic of the summer reading and submits other reports on the activities at the annual meeting. Each student completing the program earns transferable credit from the University of Iowa, the home institution of the coordinators of the program. Further information and applications can be secured from the ONU sociology faculty.

Subject - Sociology (SOC)

000 - ORIENTATION
1.00 Credit(s)
Familiarization with the department, requirements for majors, planning program of courses, University catalog and library.

105 - SOCIOLOGY
4.00 Credit(s)
Introduction to the basic phenomena and processes of social life: culture, socialization, deviance, social institutions (family, polity, economy, education, religion, military), bureaucratization, social inequality, collective behavior, social movements, and population. Analysis of the interplay between the person and social groups.
240 - MARRIAGE AND THE FAMILY
4.00 Credit(s)
An institutional perspective on the family, patterns of courting, marital parental behavior, trends in the contemporary American family. Prerequisite: SOC 105.

243 - SOCIAL DEVIANCE 1
4.00 Credit(s)
Sociological perspectives on the processes of individual and group deviance, a discussion of selected major forms of deviance, their causes, processes, and consequences. Prerequisite: SOC 105.

246 - WORK AND ORGANIZATIONS
4.00 Credit(s)
The course introduces the student to key concepts, topics and issues related to work and complex organizations. The meaning of work, job satisfaction, the changing structure of the labor force and the future of work will be studied. The structure and function of complex organizations will be analyzed, focusing on dimensions of organization, formalization, hierarchy of authority, organizational technology, communications and the external environment. Examples are drawn from the kinds of organizations familiar to students from their own experiences (schools, colleges, work settings), future career sites (corporations, criminal justice agencies, professional partnerships, etc.). (Formerly SOC 245)

247 - SOCIAL INEQUALITY
4.00 Credit(s)
The variety of stratification systems; status attainment, social mobility, and social immobility; detailed descriptions of life among the poor, rich and middle classes in America and elsewhere. Prerequisite: SOC 105.

250 - CULTURAL ANTHROPOLOGY
4.00 Credit(s)
An introduction to the major concepts and principles of cultural anthropology, emphasizing the understanding of the total configuration and interrelationships of culture traits, complexes, and social relationships in a particular geographic environment and historical context. Prerequisite: SOC 105.

251 - QUANTITATIVE METHODS IN BEHAVIORAL RESEARCH
4.00 Credit(s)
Applications in the behavioral sciences of several sampling distributions (binomial, normal, Student’s t, Chi square, F, and certain distributions used in “nonparametric tests”) as well as correlation and regression. Major emphasis on testing behaviorally meaningful hypotheses. Prerequisite: MATH 142.

252 - QUALITATIVE METHODS IN BEHAVIORAL RESEARCH
4.00 Credit(s)
Survey of major research techniques, including participant and non-participant observation, interview, questionnaire, use of available data, and experiment. Other topics include sampling and establishing causality in non-experimental research. Prerequisite: SOC 105.

261 - CRIMINOLOGY
4.00 Credit(s)
A study of the nature and extent of crime, development of criminological theory, major forms of criminal behavior, and society’s attempts at prevention and control of crime. The major perspectives, issues and diverse concerns that characterize contemporary criminology are presented. Prerequisite: SOC 105.

300 - PRACTICUM IN TEACHING IN THE BEHAVIORAL SCIENCES
2.00 Credit(s)
Specially planned teaching experiences in courses in the department, including tutoring, curriculum development and preparation of demonstrations. Prerequisite: PSYC 212 and approval of the chairman. May be repeated to 6 hours. The course does not apply to major requirements.

301 - SOCIAL PSYCHOLOGY
4.00 Credit(s)
The effect of social and cultural forces upon the individual. The nature and development of attitudes, languages, and cognitive processes. Individual and group projects illustrative of the methodology of social psychology. Prerequisite: SOC 105.

304 - PRACTICUM IN RESEARCH IN THE BEHAVIORAL SCIENCES
1.00 to 3.00 Credit(s)
Assist and participate in ongoing research by faculty members within the department. Prerequisite: SOC 202 and approval of the chairman. May be repeated up to 6 hours but repeated hours do not apply to major or graduation requirements.

348 - MEDICAL SOCIOLOGY
4.00 Credit(s)
Social interaction between patient and physicians, nurses, pharmacists, and other healthcare personnel; social interaction among those personnel; social definition of illness; societal response to illness; social epidemiology; education and training of medical personnel. Prerequisite: SOC 105.
351 - WORLD CRIMINAL JUSTICE SYSTEMS
4.00 Credit(s)
The organization and operation of the criminal and juvenile justice systems in England, Canada, France, Japan, Egypt, India, South Korea, China and Saudi Arabia. Crime and delinquency rates in these countries are reviewed, the police, courts and corrections systems are analyzed, and prevention and control issues are discussed. Satisfies the Third World requirement. Prerequisites: SOC 105 and one of the following: PLSC 121, SOC 261, or SOC 361.

361 - DELINQUENCY AND JUVENILE JUSTICE
4.00 Credit(s)
An analysis of competing theoretical approaches to the causes of delinquent behavior, and the study of the prevention, treatment, and control of delinquency. Procedures and major contemporary issues in Juvenile Justice are addressed. Prerequisite: SOC 105.

446 - SOCIAL THOUGHT
4.00 Credit(s)
Traces sociological theorizing from sociology's historical origins through the classical and contemporary periods. Important theorists covered include Karl Marx, Emile Durkheim, Max Weber, George Herbert Mead, and Talcott Parsons. Emphasis is placed on comparing and contrasting the major theoretical perspectives which provide the foundation for a scientific study of social life. Prerequisite: SOC 105.

498 - INDEPENDENT STUDY IN SOCIOLOGY
1.00 to 4.00 Credit(s)
Prerequisite: Approval of chairman.

DEPARTMENT OF TECHNOLOGY

Professor Devier (Chair); Associate Professor Rouch; Assistant Professor Shearrow.

The course work comprising the curriculum in technology is designed to prepare students for careers in professional, technical fields throughout industry and education. The intent is to provide broad, foundational experiences in the technologies and applied sciences that comprise modern industrial-technical society. Carefully structured classroom and laboratory activities feature numerous operations and processes that promote realistic involvement with the construction, manufacturing, technical communications, energy, power, and transportation-related fields. Course work and associated laboratory assignments place emphasis on researching, designing, experimenting, fabricating, and managing.

Both the bachelor of science and the bachelor of arts degree options are available for either career path. The number of quarter hours in the major varies depending upon the career path selected. Those selecting the technology education teacher certification route must complete all state and university requirements for certification. Those selecting the technology/industrial management path must complete an option/minor comprised of a minimum of 28 hours in one of the following: business, technical training, graphic communication, design analysis, or a specially selected option/minor.

The department offers two work experience programs for the industry-bound student. The first is a one-quarter internship designed to give the student a ten-week real-world experience which is completed during the normal four-year program, usually during the fall of the senior year. The other is a five-year co-op program in which the student completes six quarters (two summer and four normal quarters) of work experience, usually with the same company. The program is divided into two 3-quarter experiences, one completed after the sophomore year and the other after the junior year. The student gains considerable experience and is able to help offset the cost of school.

One minor is also available in technology consisting of 28 credit hours for industry-bound students in related majors.

The department has developed an extensive program of field work involving visits to industrial centers, museums, and schools. Students are required to participate in these excursions and are encouraged to participate in a variety of other organized professional activities.

A senior project exhibition is required of each student majoring in the department of technology.

Technology Major (all TECH courses)
Orientation 000
Introduction to Technology 110
Materials and Processes 1 130
Microcomputer Applications in Technology 140
Introduction to Computer-Assisted Drafting 220
Computer-Assisted Construction Design 221
Computer-Assisted Product Design 223
Introduction to Communication Technology 240
Sophomore Seminar in Technology 294
Machining Technology 332
Casting and Fabricating Technology 333
Computer Automated Manufacturing 335
Construction Technology 350
Fundamentals of Electricity/Electronics 361
Manufacturing Management 412
Materials and Processes 2 430
Product Manufacturing 431
Energy and Transportation 460
Digital Electronics: Concepts and Applications 462
Quality Control and Work Measurement 470
Senior Seminar in Technology 494  
Senior Project in Technology 495  
Tour of American Industries 496

Options/Minors (28 hours)  
An option or minor is required of all technology-industry bound students. The departmental structured options to select from are as follows:

Business Option  
Microeconomics (ECON 202)  
Accounting (ACCT 211, 212)  
Business Law (ABUS 312)  
Principles of Management (MGMT 330)  
Marketing (MRKT 351)  
Business elective, four hours

Graphic Communication Option  
Advanced Graphic Communications (TECH 340)  
Photography (TECH 341)  
Technical Illustration (TECH 421)  
Studio Foundations (ART 150)  
Graphic Design I (ART 222)  
Printmaking 2 (ART 385)  
Magazine Writing (ENGL 243)  
Journalism Layout & Design (ENGL 246)

Design Analysis Option  
Physics: Mechanics of Solids & Fluids (PHYS 231)  
Calculus 1 (MATH 163)  
Calculus 2 (MATH 261)  
Intro. to Engineering 1 & 2 (GE 101, 102)  
Statics (GE 113)  
Dynamics (GE 214)  
Strength of Materials (GE 223)

Technical Training Option  
Psychology (PSYC 100)  
Introduction to Education (EDUC 110)  
Educational Technologies (EDUC 320)  
Technology and Society (TECH 200)  
Introduction to Technical Education (TECH 474)  
First Aid and Safety (HPES 112)  
Technical In-depth Electives, eight hours from TECH 231, 260, 340, 341, 421, 497

Alternative minors/technical options may be selected to match a given student's career goals. This decision is made in consultation with the department of technology.

Internship  
All technology-industry bound students (major or minor) are encouraged to complete 15 hours of Internship (TECH 484) in an industrial setting either during a summer(s) or academic year. The arrangements are made through the department prior to the student's registration for the internship.

Co-op  
The co-op is a five-year school/work program designed to provide the student with extensive experience. The outline of courses is as follows (all TECH courses):  
Co-op Experience Orientation (280), winter of 2nd year  
Co-op in Technology 1, 2, & 3 (261, 282, & 283), summer, fall, & winter after 2nd year  
Co-op Experience Seminar 1 (285), spring of 3rd year  
Co-op in Technology 4, 5, & 6 (481, 482, & 483), spring, summer, & fall of 4th and 5th years  
Co-op Experience Seminar (485), spring of 5th year

Technology Minor (28 hours)  
Students from other disciplines who desire to gain a basic introduction to industry may select a minor as follows (all TECH courses):  
Materials and Processes 1 130  
Introduction to Computer-Assisted Drafting 220  
Introduction to Communication Technology 240  
Machining Technology 332  
Construction Technology 350  
Electives (minimum of eight credit hours) selected from 140, 200, 221, 223, 260, 294, 333, 335, 340, 341, 360, 361, 370, 412, 421, 430, 431, 462, 490, 494, 495, 496, or 497.

Technology Teacher Education (K-12)  
Certification Major (all TECH courses)  
Orientation 000  
Introduction to Technology 110  
Materials and Processes 1 130  
Microcomputer Applications in Industrial Technology 140  
Introduction to Computer-Assisted Drafting 220  
Computer-Assisted Construction Design 221  
Computer-Assisted Product Design 223  
Introduction to Communication Technology 240  
Sophomore Seminar in Technology 294  
Machining Technology 332  
Casting and Fabricating Technology 333  
Computer-Automated Manufacturing 335  
Construction Technology 350  
Fundamentals of Electricity/Electronics 361  
Materials and Processes 2 430  
Product Manufacturing 431  
Energy and Transportation 460  
Student Teaching Seminar 491  
Senior Seminar in Technology 494  
Senior Project in Technology 495  
Tour of American Industries 496

All students pursuing teacher certification must complete the professional education sequence; see Center for Teacher Education and Certification.
Technical Electives - All Majors
There are several technical courses offered by the department which may be selected by students to add greater depth. These include (all TECH courses):
Technology and Society 200
Custom Woodworking 231
Auto Preventive Maintenance 260
Advanced Graphic Communication 340
Photography 341
Technical Illustration 421
Introduction to Technical Education 474

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Subject - Technology (TECH)

000 - ORIENTATION
1.00 Credit(s)
An introduction to the department, introduction to college life. Familiarization with the basic curriculum options. Planning a course program. University student services. The library. The departmental major requirements. Required of all departmental majors.

110 - INTRODUCTION TO TECHNOLOGY
4.00 Credit(s)
For students majoring, minoring, or interested in the Department of Technology. An overview of technology and industry and the two career path options offered by the Department: technology management and technology education. Study of the major technology systems: construction, manufacturing, communication, energy/power/transportation, and servicing. Lab activities and visitations utilized to reinforce concepts.

130 - MATERIALS AND PROCESSES 1
4.00 Credit(s)
Major metallic and wood based industrial materials and their processing. The conversion of basic (raw) materials via harvesting, refining, and processing into consumer products. An emphasis on safety and destructive/nondestructive testing will be applied during and after the various production processes. Replaces ITEC 132.

140 - MICROCOMPUTER APPLICATIONS IN TECHNOLOGY
4.00 Credit(s)
Operating micro computers and various software programs. Utilization of the University's network will be emphasized during course activities. DOS based and Macintosh machines will be utilized. Students will also be exposed to simple programming on CNC machines. No prior experience with a computer is required.

190 - SPECIAL TOPICS IN TECHNOLOGY
1.00 to 3.00 Credit(s)

200 - TECHNOLOGY AND SOCIETY
4.00 Credit(s)
A survey dealing with the major concepts of technology; its development, its effects on society, and the problems associated with it. Students will be required to critically evaluate these effects through written and verbal activities.

220 - INTRODUCTION TO COMPUTER ASSISTED DRAFTING
4.00 Credit(s)
Graphic representation using the personal computer. Attention will be placed on the standards of the technical graphics field and the graphic illustration and visualization techniques as applied to CAD software. Students develop proficient use of AutoCAD software for: orthographic projection, sections and conventions, auxiliary views, 3D drawings, and applied geometry.

221 - COMPUTER ASSISTED CONSTRUCTION DESIGN
4.00 Credit(s)
Construction planning, design, engineering and layout. Light construction principles, architectural details, plot surveying and layout, creation of architectural working drawings and cost estimating using personal computer CAD software. Prerequisite: TECH 220 or permission.

223 - COMPUTER ASSISTED PRODUCT DESIGN
4.00 Credit(s)
Technical sketching, product design processes and the components/variables of good design. Focus on utilizing the computer in the design process to generate working drawing/designs for manufactured products. Oral presentations, analysis of product designs through solids modeling, prototype development and market surveys.

231 - CUSTOM WOODWORKING
3.00 Credit(s)
An introduction to basic processes, tools, and materials employed in the production of custom, individually designed, and crafted wood products. May be repeated up to a total of nine hours.
240 - INTRODUCTION TO COMMUNICATION TECHNOLOGY
4.00 Credit(s)
The history of communication technologies, present day procedures, equipment, and materials that are associated with the graphic reproduction techniques of relief, lithography, screen, and copying/duplication, as well as, graphic layout, design, and composition using desktop publishing technology and finishing and binding. Video communication technology will be covered in addition to the graphic reproduction topics.

260 - AUTOMOTIVE PREVENTATIVE MAINTENANCE
3.00 Credit(s)
General automotive maintenance and servicing geared towards the automobile owner/operator. Topics covered include: automotive tune-up, trouble shooting, seasonal adjustments, and preventative maintenance scheduling.

280 - COOPERATIVE EXPERIENCE ORIENTATION
1.00 Credit(s)
Prepares the technology co-op student to begin the experience. Topics discussed include: identifying a position, development of the Co-op Plan, preparing for the first day, position expectations, outline of co-op requirements, getting the most from the experience, and record keeping. Sophomore technology majors with preliminary acceptance in the co-op program. Graded S/U.

281 - CO-OP IN TECHNOLOGY 1
1.00 Credit(s)
Provides opportunity for study and experience outside the traditional campus setting via employment with an industrial enterprise. Student functions as an effective employee while gaining valuable insight and experience related to his/her chosen field. The student is supervised and must submit a written co-op report. Graded S/U. Prerequisite: TECH 280.

282 - CO-OP IN TECHNOLOGY 2
1.00 Credit(s)
Continuation of TECH 281. Prerequisite: TECH 281.

283 - CO-OP IN TECHNOLOGY 3
1.00 Credit(s)
Continuation of TECH 282. Prerequisite: TECH 282.

285 - CO-OP EXPERIENCE SEMINAR 1
1.00 Credit(s)
Co-op Experience Seminar TECH 285 follow up course to the student's first co-op placement. The total experience will be reviewed in a structured format of written and oral reports. Graded S/U. Prerequisite: TECH 283.

290 - SPECIAL TOPICS IN INDUSTRIAL TECHNOLOGY
1.00 to 3.00 Credit(s)

294 - SOPHOMORE SEMINAR IN TECHNOLOGY
1.00 Credit(s)
Required of all technology majors near the end of their second year of college. Topics: assessment of basic skills, career planning, minor/option selection, review of academic performance, study skills, personality testing, and related topics. The course meets one hour per week and is graded. Prerequisite: department major and five quarters' work.

332 - MACHINING TECHNOLOGY
4.00 Credit(s)
Machining practices primarily used for the separating of metallic materials will be emphasized. A variety of machine tools will be used in the instruction and lab activities with nontraditional machining techniques (EDM, LASER, etc.) and machine controls (NC, CNC) considered.

333 - CASTING AND FABRICATING
4.00 Credit(s)
Pattern making, molding, and casting of ferrous and nonferrous materials. Principals and practices of fabricating materials. Emphasis on welding operations including MIG, TIG, SMAW, resistance, and oxy-acetylene. Mechanical fasteners and adhesives will be utilized in assembly processes.

335 - COMPUTER AUTOMATED MANUFACTURING
4.00 Credit(s)
Automated manufacturing techniques which include CAM, CIM and FMS. Activities will center around the automation of the production of products using automated production machines, material handling equipment, robots and control systems. Micro Computer Applications in TECH 140 would be helpful in completing the lab assignments.
340 - ADVANCED GRAPHIC COMMUNICATIONS
2.00 Credit(s)
Advanced offset lithography processes including line and halftone process camera work, stripping of negatives to produce flats, platemaking, and press operations. Simple signature layout, binding and finishing are also covered. Advanced study in silk screen and relief processes will be designed for students with special interests. May be repeated to a total of six hours. Prerequisite: TECH 240 or equivalent.

341 - PHOTOGRAPHY
4.00 Credit(s)
Techniques of photographic composition, camera types, uses and accessories, photographic optics, and laboratory methods and materials; dark room developing and printing of black and white photography; color positive photography.

350 - CONSTRUCTION TECHNOLOGY
4.00 Credit(s)
Basic concepts of construction techniques used today; including the methods and materials involved in framing, enclosing, and finishing residential and light commercial buildings. Study of financing, contracting, procuring, supervising, site-operation, foundation, structural elements, utilities, landscaping, and personnel associated with construction activities.

361 - FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS
4.00 Credit(s)
The fundamentals of alternating and direct current will be explored in the context of changing technological advances. Basic electrical circuits and electronic parts will be utilized in electronic communication activities. The use and maintenance of test equipment will be emphasized during the testing of analog and basic digital circuits. (Formerly TECH 461).

390 - SPECIAL TOPICS IN INDUSTRIAL TECHNOLOGY
1.00 to 3.00 Credit(s)

412 - MANUFACTURING MANAGEMENT
4.00 Credit(s)
Manufacturing planning, organizing, controlling and directing. Productivity, management foundational concepts, manufacturing enterprise organization, design and equipment design of facilities and processes, equipment selection and maintenance, materials handling inventory control, purchasing and safety. Case studies of industry.

421 - TECHNICAL ILLUSTRATION
2.00 Credit(s)
Techniques of illustration for mechanical and architectural drawing. Activities in the use of shading mediums of graphite and ink will be covered including stippling, line shading, texture boards, and airbrush rendering. Prerequisite: TECH 220 or equivalent.

430 - MATERIALS AND PROCESSES 2
4.00 Credit(s)
Contemporary non-metallic industrial materials and their processing. Conversion of basic (raw) materials via refining and processing into consumer products. Major emphasis on plastics, with ceramics, composites, fibers, fabrics, leathers and others addressed to a lesser degree.

431 - PRODUCT MANUFACTURING
4.00 Credit(s)
Machine operations in the manufacture of various types of products, combining of different materials and processes into consumer products. Emphasis on process design, material handling, organization of work, division of labor, distribution and sales practices relating to the mass production industries. A major line production will be completed by each class. Prerequisite: TECH 223 or equivalent.

460 - ENERGY AND TRANSPORTATION
4.00 Credit(s)
Concepts of energy conversion, power transmission, and applications. Methods of maintaining and repairing energy conversion and transmission devices. A focus is placed on the major components of transportation systems such as propulsion, guidance, suspension, control, support, and structure systems used in stationary and vehicular systems. (Formerly TECH 360).
462 - DIGITAL ELECTRONICS: CONCEPTS AND APPLICATIONS
4.00 Credit(s)
Concepts and applications of digital, advanced digital, and basic microprocessor electronic circuits will be explored. An industrial based application of these concepts will include the areas of robot construction, robotic interfacing, computer interfacing, sensors, controllers, and digital communication. Prerequisite: TECH 361.

470 - QUALITY CONTROL AND WORK MEASUREMENT
4.00 Credit(s)
Methods applied to quality assurance and work measurement in mass production industries. Consideration will be given to statistical applications, qualitative and quantitative analysis, bio mechanics, work station design, and the planning of systems for total quality assurance programs. Case studies of industry.

474 - INTRODUCTION TO TECHNICAL EDUCATION
4.00 Credit(s)
Elements of instruction, instructional scope and sequence, development of training programs, and planning, organizing, and administering technical laboratories for students planning on careers in teaching/training in industry and vocational/technical secondary and postsecondary schools. Required for Technical Training Option.

481 - CO-OP IN TECHNOLOGY 4
1.00 Credit(s)
Provides the opportunity for study and experience outside the traditional campus setting via employment with an industrial enterprise. The student functions as an effective employee while gaining valuable insight and experience related to his/her chosen field. The student is supervised and must submit a written co-op report. Graded S/U. Prequisite: TECH 285.

482 - CO-OP IN TECHNOLOGY 5
1.00 Credit(s)
Continuation of TECH 481. Prerequisite: TECH 481.

483 - CO-OP IN TECHNOLOGY 6
1.00 Credit(s)
Continuation of TECH 482. Prerequisite: TECH 482.

484 - INTERNSHIP IN TECHNOLOGY
5.00 to 15.00 Credit(s)
A supervised program of experiences in production practices, management techniques, research applications, and other activities representative in modern industry. Selection is based upon proper application, screening, and acceptance by an appropriate industry. Five hours of credit for 3-4 weeks of full time work in the summer or fifteen hours of credit for one full time quarter during the year. Graded S/U. A maximum of fifteen hours to count toward graduation.

485 - CO-OP EXPERIENCE SEMINAR 2
1.00 Credit(s)
Co-op Experience Seminar TECH 485 is a follow up course to the student's second co-op placement. The total experience will be reviewed in a second structured format of written and oral reports. Graded S/U. Prerequisite: TECH 483.

490 - SPECIAL TOPICS IN INDUSTRIAL TECHNOLOGY
1.00 to 3.00 Credit(s)

491 - STUDENT TEACHING SEMINAR
1.00 Credit(s)
The student teaching seminar is required and is to be taken concurrently with student teaching and is in addition to Education Department seminar EDUC 475. The seminar is intended to reinforce field experiences as well as develop insights into implementation of recent curriculum development in Technology Education. Corequisites: EDUC 470 and/or 480.

492 - INTERNSHIP SEMINAR
1.00 Credit(s)
Provides for a structured method for weekly review and evaluation of the internship experience. Prerequisites: Junior standing and technology major. Graded S/U. Corequisite: TECH 484.

494 - SENIOR SEMINAR IN TECHNOLOGY
1.00 Credit(s)
Required of majors in technology who are within three quarters of graduation. Career planning, placement services, the employment search, graduate school, senior project review, graduation procedures, and related issues. Graded S/U.
495 - SENIOR PROJECT IN TECHNOLOGY
1.00 Credit(s)
Individual studies and investigations involving the application of knowledge to the solution of technical problems including research and development, testing, fabrication, assembly, and evaluation. Must be repeated to a total of 3 hours.

496 - TOUR OF AMERICAN INDUSTRIES
1.00 Credit(s)
Participation with the annual department-sponsored comprehensive tour of industries including the structured pre- and post-trip seminars and the submission of a written technical report pertaining to one or more facets of the experience. May be repeated.

497 - INDEPENDENT STUDY IN TECHNOLOGY
1.00 to 3.00 Credit(s)
THE COLLEGE OF
Business Administration

Terry L. Maris, Dean

Accounting
Professor Young; Associate Professors Sung, Woods; Assistant Professors Chipalkatti, Christopher, Rogers

Economics
Professors Goldberg, Meininger; Visiting Assistant Professors Rishi, Simon

Finance
Assistant Professor Mohan

Management
Professors Cooper, Maris; Associate Professor Savino

Marketing
Associate Professor Ewing; Assistant Professor Hoyt

Patton Chair
The George Willard Patton Chair of Business and Economics, endowed by the Richard King Mellon Charitable Trust of Pittsburgh, Pennsylvania, has been established beginning with the academic year 1973-74. The 1993-94 recipient of this endowed professorship is Dr. Ken Cooper, professor of management.

Mission Statement
The College of Business Administration will provide students an excellent business education within the context of the liberal arts tradition and the mission of Ohio Northern University. Our intrinsic ability to pursue this mission derives from our primary emphasis upon undergraduate education; the size and reputation of the University; and a curriculum that stresses knowledge and skills within one’s major blended with the extensive liberal arts curriculum of the University.

Quality education will be achieved through emphasis on highly effective teaching and applied research to bring current perspectives on both domestic and international business subjects into the classroom.

Admissions Standards
Candidates seeking admission to the College of Business Administration are required to meet the general requirements for admission to the University. The College of Business Administration accepts high school graduates who have 16 acceptable units of high school credits. Thirteen of these units are prescribed as follows: Four units of English; three units of mathematics (including algebra and geometry); six units in history, social studies, language, or natural science, or any combination thereof. Candidates are encouraged to pursue a foreign language while in high school. Acceptable scores on the American College Test or the College Entrance Examination Board Test are expected of all candidates.

High school seniors with proven superior ability and maturity may enroll for a limited amount of course work for credit on campus during their senior year, or during the summer preceding, if they have the written recommendation of their high school principal and the approval of the Academic Qualifications and Scholarship Committee of the College of Business Administration.

Transfer Students The Ohio Northern University College of Business Administration welcomes students from other accredited colleges and universities. Applications for transfer will be considered only if the student has a prior grade point average of 2.00 on a 4.00 scale, and the student is eligible to return to his/her former institution.

Degree Requirements

General Education

Orientation
Communication Skills
1. English 110, 111, and one other English course
2. Three approved speech courses

Distribution Requirements
Fine Arts
1. One course from among Art 100, Music 100, or Theatre 105

Humanities
Religion and Philosophy
1. Religion 105 or 107 or 108 or 109 or 110
2. One philosophy course

Social Sciences
1. Western Civilization 110, 111
2. One other Social Science Division course
   Mathematics, Computer, and Natural Sciences
   1. Prob and Stat 1 and 2 (MATH 142 and 143)
   2. Introduction to Calculus 1 and 2 (MATH 154 and 155)
3. One science course

Health and Physical Education
1. Three physical education service courses below the 100-level. A maximum of six such hours will count toward graduation.

Electives
1. Eight elective hours are required in the College of Arts and Sciences.

Business Administration Core Courses
Orientation 000; Accounting 211, 212; Economics 202, 203; Business Law 312; Finance 362; Management 240, 330, 364, 485; Marketing 351; Personal Computer Applications for Business 201; one additional economics elective; one additional business elective.

Specific Majors and Major Courses Required

Beyond the general education requirements and the business core, students must also complete specific requirements in their major areas.

Accounting: Accounting 301, 302, 314, 315, 435, and eight hours of upper division accounting electives.

Economics: Economics 352, 383, 384, 385 or 411, and eight hours of upper division economics courses.

Finance: Accounting 301; Finance 369, 460, 461, 467, 468.

Management: Management 335, 363, 486, and twelve hours of upper division management electives.

Marketing: Marketing 370, 371, 434, 453, 455, and four hours of upper division marketing electives.

Dual Majors

No course used to satisfy either a specific requirement or a discipline elective may be counted toward a dual major except as a general elective.

Minors

The minor shown below is available only to non-business majors. (A "C" grade or better is required in all courses.)

Business Administration: ABUS 312; ACCT 211, 212; ECON 202, 203; FINC 362; MGMT 330; MRKT 351; and four hours of approved CBA electives.

Graduation Requirements

Bachelor of Science in Business Administration

It is the student's responsibility to assure that all of the graduation requirements for the degree and major(s) sought are satisfied:

1. The general education specific and elective courses in the College of Arts and Sciences.
2. The Business Administration core requirements and electives.
3. The specific major requirements and electives.
4. Satisfactory completion and presentation of a minimum of 182 quarter hours of appropriate course work for the specific major(s).
5. A minimum 2.00 grade point average.
6. A letter grade of "C" or better in all but one course specified in (2) and (3) above.

GENERAL REGULATIONS OF THE COLLEGE OF BUSINESS ADMINISTRATION

1. A student may not register for more than 19 hours of academic course work without the dean's written approval. A normal program consists of 12 to 18 scheduled hours including physical education.
2. All freshmen in the College of Business Administration are required to take orientation, which is scheduled in the fall quarter.
3. A student indicates his/her major choice by completing a declaration of major form available in the Office of the Dean. Faculty advisors assist the student in the planning of his/her major.
4. Each student enrolled in the College of Business Administration is expected to make consistent progress toward completion of the degree requirements of his/her major(s).
5. CBA majors need to complete ACCT 211 with a C grade or higher before attempting ACCT 212.
6. With the written permission of the instructor and the dean, course prerequisites may be waived.
7. Except where noted in the course descriptions, credit hours earned in repeated courses may be counted only once in the total hours required for graduation.
8. A student not enrolled for one academic year (except on approved academic leave) must meet graduation requirements in the catalog effective for the academic year during which the student reentered.
9. To participate in the internship program, student must have junior or senior status and a minimum 2.5 GPA.

S/U Grade Option

Sophomores, juniors, seniors, and post graduate students in the College of Business Administration are given the opportunity to register for one course per quarter on an S/U option basis, with the following stipulations:
1. The student must be registered full-time in the College of Business Administration.
2. The student must have sophomore, junior, senior, or postgraduate standing.
3. The requested course cannot be in the College of Business Administration except those specified as S/U in course descriptions.
4. The course cannot be a 100-level general education course.
5. The requested course cannot be a cognate.
6. The grade of "S" is to be equated with A, B, C, and the grade of "U" is equated with D or F. S/U grades are not computed in the accumulative grade point average.
7. The student cannot change the grading option after the second week of classes.

Classification of Students

For purposes of classification, the minimum requirements for sophomore standing are 45 quarter hours of completed academic work; for junior standing 90 quarter hours; and for senior standing 135 quarter hours.

Academic Standing

A grade point average of 2.00 or higher is required for graduation. If a student's accumulative grade point average falls below 2.00, he/she is placed on academic probation and is not eligible to participate in competitive activities of individuals, teams, or other groups officially designated as representing the University.

Any student on probation whose work for the following quarter continues below 2.00 accumulative grade point average will have his/her record reviewed by the Academic Qualifications and Scholarship Committee of the college and may be recommended to the dean for suspension or dismissal from the college.

Prelaw Program

Business students interested in the Prelaw Program will find a complete description on page 33 of this publication.

Small Business Institute

The Small Business Institute (SBI) provides intensive business counseling by utilizing small teams of qualified university students in business disciplines under expert faculty guidance. The students meet frequently over the course of a full university term with the small business owner to identify and solve unique business problems.

The SBI program was established by the Small Business Administration in 1972. Approximately 500 business colleges have been carefully chosen throughout the United States to administer this program.

A detailed case report is written and given to the client with suggestions as to how to implement it. SBI teams work on most business-related problems and provide recommendations tailored to the specific needs of the business.

Internship Program

The internship program in the College of Business Administration has been designed to help students gain these valuable experiences while still in college. By combining the concepts discussed in the classroom with practical on-the-job experiences, the internship program helps prepare the businessmen and businesswomen of tomorrow.

Academic year internships may be full- or part-time programs lasting 10 weeks. Students usually work in the Ohio Northern University area. Interns may earn as many as 16 quarter hours of credit.

Summer internships take place in a wider area of coverage around Ohio. As with academic-year internships, students may earn up to 16 credit hours.
International Business Program

The international business program allows students to pursue specialized studies and gain first-hand experience of a particular country or region of the world. Conceivably, any country can be selected, but the college has traditionally focused its resources on Central and Eastern Europe. However, recently some students have chosen countries in Asia and Central/South America, as well.

The principal opportunities available are student exchange, study abroad, work abroad, and international executive education. Formal agreements exist for the exchange of students between Ohio Northern University and Glasgow Caledonian University in Scotland and the University of Science and Technology in France. Students participating in these programs typically study abroad during their junior year.

Study abroad may take place at virtually any foreign college or university if their academic program is determined to meet certain standards for transfer of credit. Students are encouraged to enroll for a full academic year abroad. In some cases, study may occur during the summer or for a lesser period during the academic year.

Work abroad is available to ONU business students in cooperation with the Council on International Educational Exchange. This option may be combined with study abroad or pursued independently during the summer. A special bonus is that such employment may qualify the student to earn up to 16 credits toward graduation through the internship program.

International executive education has as its goal increasing understanding between American business managers and their counterparts throughout the world. This is accomplished by means of seminars, workshops, cultural programs, and direct contact with prospective trading partners. Essential to this program is the reception of foreign executives in Ohio and taking Ohio business leaders abroad to explore opportunities for market expansion. A formal agreement with Moscow International Business School in Russia has empowered the college to achieve a position of prominence in this type of activity.

Students with a foreign language background are likely to find that they have more opportunity to take advantage of these programs. All business students therefore are strongly advised to continue their foreign language study at ONU. Those who have no prior coursework in foreign language are encouraged to incorporate such courses into their undergraduate studies.

College of Business Administration

Subject - General Business (ABUS)-

000 - ORIENTATION / CAREER DEVELOPMENT AND SEARCH
1.00 Credit(s)
Familiarization with the college, requirements of the majors, planning sequences of courses, university catalog and library, career investigation and guidance. Fall Quarter. Course graded S/U.

201 - PERSONAL COMPUTER APPLICATIONS FOR BUSINESS
4.00 Credit(s)
Business applications for microcomputers. Introductory level use of software for word processing, file management, spreadsheets, and graphics.

312 - BUSINESS LAW 1
4.00 Credit(s)
The legal environment in which businesses must operate. Topics include business ethics, sources of law, methods of dispute resolution, and the basic law regulating contracts, agency, business organizations, the workplace, consumer transactions, purchase and sale of securities, anticompetitive activities, actions affecting the environment, and international business transactions. (Formerly ABUS 322).

313 - BUSINESS LAW 2
4.00 Credit(s)
The law as it applies to certain private business transactions. Topics include contracts, sales, commercial paper, secured transactions, suretyship, bankruptcy, insurance, property, landlord/tenant, wills, estates, and trusts. (Formerly ABUS 323 and 324). Prerequisite: ABUS 312.

475 - SMALL BUSINESS INSTITUTE
4.00 Credit(s)
A team of students is assigned to work with a small business. Supervision is provided by a faculty member. A confidential and professional relationship is maintained between the team and the client business. Course is graded S/U. May be repeated for a maximum of 8 hours. Credit earned can be used only as general elective hours. SBI credit cannot be used to satisfy either major or business elective requirements. Restricted enrollment. Prerequisite: Permission of Director.
### Subject - Accounting (ACCT)

#### 211 - PRINCIPLES OF ACCOUNTING 1
4.00 Credit(s)
Analysis and recording of business transactions and accumulating data on the results of economic activity. Concepts and issues of financial reporting for business entities, including basic theory of the report writing model. Basic financial statement analysis. (Formerly ACCT 231 and 232).

#### 212 - PRINCIPLES OF ACCOUNTING 2
4.00 Credit(s)
Continuation of ACCT 211. Uses of accounting data to support management decision-making and control of business operations, determination of costs and cost behavior. Specialized application areas of accounting. (Formerly ACCT 232 and 233). Prerequisite: ACCT 211.

#### 292 - SPECIAL TOPICS IN ACCOUNTING
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

#### 301 - INTERMEDIATE ACCOUNTING 1
4.00 Credit(s)
Financial accounting functions and basic theory. Preparation of financial statements and actuarial methods. Current assets, operational assets, and current liabilities. Prerequisite: ACCT 212.

#### 302 - INTERMEDIATE ACCOUNTING 2
4.00 Credit(s)
Preparation of financial statements, long term liabilities, income taxes, leases, pensions and owners' equity. Prerequisite: ACCT 301.

#### 303 - INTERMEDIATE ACCOUNTING 3
4.00 Credit(s)

#### 314 - COST ACCOUNTING 1
4.00 Credit(s)

#### 315 - COST ACCOUNTING 2
4.00 Credit(s)

#### 387 - TAXATION OF INDIVIDUALS
4.00 Credit(s)
Federal income tax planning and reporting for individuals. Topics include gross income, personal and business deductions, and tax credits. Prerequisite: ACCT 212.

#### 388 - TAXATION OF PROPERTY TRANSACTIONS AND CORPORATIONS
4.00 Credit(s)
Federal income tax planning and reporting for complex industrial income tax issues, property transactions, and C corporations. Topics include alternative minimum tax, accounting periods, nontaxable exchanges, capital gains and losses, recapture, and corporate organizations, distribution and accumulations. Prerequisite: ACCT 387.

#### 389 - TAXATION OF S CORPORATIONS, PARTNERSHIPS, ESTATE & GIFTS
4.00 Credit(s)
Federal income tax planning and reporting for S corporations, partnerships, estates, trusts, and tax exempt entities. Federal gift and estate tax planning and reporting. Prerequisite: ACCT 388.

#### 392 - ADVANCED FINANCIAL ACCOUNTING
4.00 Credit(s)
Various forms of business combinations and intercompany transactions, transactions denominated in foreign currencies, and government accounting. Prerequisite: ACCT 303.

#### 402 - ACCOUNTING INFORMATION SYSTEMS
4.00 Credit(s)
The use, evaluation, and design of accounting information systems with emphasis upon the interface of accounting systems and computer technology. Prerequisite: ACCT 302.

#### 403 - AUDITING 1
4.00 Credit(s)
Auditing procedures and practices relating to the independent verification of financial records, including assessment of the internal control system, audit evidence, issues of materiality and risk, and audit reports. Prerequisite: ACCT 402.
404 - AUDITING 2
4.00 Credit(s)
Statistical sampling in auditing, auditor’s professional ethics and legal liability, computer technology in auditing, and current issues and problems in auditing. Prerequisite: ACCT 403.

427 - INTERNSHIP IN ACCOUNTING
1.00 to 16.00 Credit(s)
Field experience in accounting. Course graded S or U. Can be repeated for a maximum of 16 credit hours. Credit earned can be used only as general elective hours. Internship credit can not be used to satisfy either accounting or business elective requirements. Consult advisor.

435 - INTERNATIONAL FINANCIAL ACCOUNTING
4.00 Credit(s)

477 - CPA PROBLEMS 1
2.00 Credit(s)
Application of auditing and legal principles to hypothetical situations via in-class group participation and computerized study. Utilization of problems from past CPA examinations to develop analytical skills in auditing and business law. Course graded S or U. Credit earned in this course can be used only as general elective hours. The course can not be used to satisfy either accounting or business elective requirements. Seniors only.

478 - CPA PROBLEMS 2
2.00 Credit(s)
Continuation of ACCT 477. Application of financial accounting principles to hypothetical situations. Course graded S or U. Credit earned in this course can be used only as general elective hours. The course can not be used to satisfy either accounting or business elective requirements. Prerequisite: ACCT 477.

479 - CPA PROBLEMS 3
2.00 Credit(s)
Continuation of ACCT 477 and ACCT 478. Application of cost, governmental, nonprofit, and tax accounting principles to hypothetical situations. Course graded S or U. Credit earned in this course can be used only as general elective hours. The course can not be used to satisfy either accounting or business elective requirements. Prerequisite: ACCT 478.

492 - SPECIAL TOPICS IN ACCOUNTING
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

499 - INDEPENDENT STUDY IN ACCOUNTING
1.00 to 4.00 Credit(s)
An in-depth exploration of a subject of special interest to both the student and the faculty member. Class hours by arrangement. Can be repeated as topic varies. Prerequisite: Junior standing and approval of the instructor. Restricted enrollment. Permission to enroll must be obtained in writing from the faculty-mentor and the Dean of the College prior to registration.

Subject - Economics (ECON)

100 - ECONOMICS
4.00 Credit(s)
The origins, characteristics, and functions of our economic organization, current institutional arrangements, the use of appropriate tools of economic analysis; relevant economic and social goals. A terminal course for non-business majors. May not be taken following a successful enrollment in ECON 202.

202 - PRINCIPLES OF MICROECONOMICS
4.00 Credit(s)
Economics of the individual firm in the free market economy; competitive and monopolistic markets. How prices ration goods and services to users, and the principles on which the total product is divided among the owners of the factors of production. Actual cases from business. No prerequisite.

203 - PRINCIPLES OF MACROECONOMICS
4.00 Credit(s)
Forces that determine the behavior of national income and output, unemployment, and the price level. Rudiments of money and banking, monetary and fiscal policy, growth and development. Selected issues of contemporary social relevance. Prerequisite: ECON 202.

290 - SPECIAL TOPICS IN ECONOMICS
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.
341 - LABOR ECONOMICS
4.00 Credit(s)
Labor as a factor in production; labor mobility; theories of the determination of wages, and bargaining theory; history and methods of labor unions, and government are presented. Offered alternate years. Prerequisite: ECON 203.

348 - URBAN ECONOMICS
4.00 Credit(s)
Definitions of urban places and regions; origins of cities; local public finance; economics of urban housing; urban transportation; economics of crime and pollution, poverty and discrimination. Offered alternate years. Prerequisite: ECON 203.

352 - MONEY AND BANKING
4.00 Credit(s)
Theories of money and credit; commercial banking practices; reserve banking; monetary and banking laws; money market; money and credit in the world economy. Prerequisite: ECON 203.

383 - INTERMEDIATE MICROECONOMIC THEORY
4.00 Credit(s)
Special problems of pricing, production, and distribution under perfect competition, monopoly, oligopoly, and duopoly in the American economy. Prerequisite: ECON 203.

384 - INTERMEDIATE MACROECONOMIC THEORY
4.00 Credit(s)
The principles, measurement, analysis, and control of aggregate economic activity; the role of consumption, investment, and saving in achieving full employment output, economic growth and price stability. Prerequisite: ECON 203.

385 - INTERNATIONAL ECONOMICS
4.00 Credit(s)
Theories and current problems of trade between nations; governmental restrictions and controls; the importance of multilateral trade, balance of payments; scarce resources; population, and employment trends. Prerequisite: ECON 203.

411 - COMPARATIVE ECONOMIC SYSTEMS
4.00 Credit(s)
Comparative study of capitalism, socialism, communism and mixed economies. Emphasis on the economics of pricing, production, and distribution under different systems. Comparative analysis of selected countries. Offered alternate years. Prerequisite: ECON 203.

423 - ECONOMICS OF THE PUBLIC SECTOR
4.00 Credit(s)
Fiscal institutions and decision making of the Public Sector; the federal budget; public good analysis, public debt issues; evaluation of tax sources for the federal, state, and local government levels; and intergovernmental fiscal relationships. Offered alternate years. Prerequisite: ECON 203.

426 - INTERNSHIP IN ECONOMICS
1.00 to 16.00 Credit(s)
Field experience in economics. Course graded S or U. Internship experiences can be repeated for a maximum of 16 credit hours. Credit earned can be used only as general elective hours. Internship credit can not be used to satisfy either economics or business elective requirements. Consult advisor.

442 - ECONOMIC HISTORY OF THE UNITED STATES
4.00 Credit(s)
Economic life in colonial America and the east-west migration; the development of modern business and industry in the United States; the corporation and its part in the nation’s growth; the causes and consequences of the Great Depression. Offered alternate years. Prerequisite: ECON 203.

443 - HISTORY OF ECONOMIC THOUGHT
4.00 Credit(s)
The development of economic thought from Greek and Hebrew writers to modern economists; Adam Smith, Malthus, Ricardo, Marx, Marshall, Keynes, and modern economists. Offered alternate years. Prerequisite: ECON 203.

490 - SPECIAL TOPICS IN ECONOMICS
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

497 - INDEPENDENT STUDY IN ECONOMICS
1.00 to 4.00 Credit(s)
An in-depth exploration of a subject of special interest to both the student and faculty member. Class hours by arrangement. Can be repeated as topic varies. Permission must be obtained in writing from the faculty mentor and the Dean of the College prior to registration. Restricted enrollment. Prerequisites: Junior standing and approval of the instructor.
362 - MANAGERIAL FINANCE
4.00 Credit(s)
The role of financial management in the firm, and the basic tools and concepts of the firm's investment, financing and dividend decisions including working capital management, capital budgeting and capital structure strategies. Prerequisites: ACCT 212 and ECON 203.

369 - INTERMEDIATE FINANCIAL MANAGEMENT
4.00 Credit(s)
Advanced concepts and methods employed in financial management. Topics include financial analysis and planning, working capital management, risk analysis and valuation of long-term investments, and capital structure analysis. Case method and personal computer based spreadsheets will be used. (Formerly FINC 368 and 374). Prerequisite: FINC 362.

421 - INTERNSHIP IN FINANCE
1.00 to 16.00 Credit(s)
Field experience in finance. Course graded S or U. Internship experiences can be repeated for a maximum of 16 credit hours. Credit earned can be used only as general elective hours. Internship credit can not be used to satisfy either finance or business elective requirements. Consult advisor.

460 - FINANCIAL INSTITUTIONS
4.00 Credit(s)
Management policies and decisions regarding asset, liability and capital management of a variety of financial institutions such as banks, insurance companies, pension funds, mutual funds and others within the legal, competitive and economic environment. Prerequisite: FINC 362.

461 - INVESTMENTS
4.00 Credit(s)
The risk-return trade off and distinctive characteristics of different vehicles of financial investment; the functioning and regulation of securities markets; the macro and micro-economic factors affecting returns on securities. The Efficient Markets Hypothesis receives special attention. Prerequisite: FINC 362.

467 - INTERNATIONAL FINANCE
4.00 Credit(s)
The unique financial challenges and opportunities faced by a multinational enterprise. Hedging as a pivotal tool of exchange rate risk management; the long-term and short-term financing opportunities available to a multinational enterprise; international cash management; and multinational capital budgeting. Prerequisite: FINC 362.

468 - SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT
4.00 Credit(s)
Conceptual and analytical frameworks for formulating investment policies, evaluating securities, portfolio formation and maintenance. Application of computers and quantitative techniques in security valuation and portfolio management from both the individual and institutional investor’s perspective. Prerequisite: FINC 461.

494 - SPECIAL TOPICS IN FINANCE
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

500 - INDEPENDENT STUDY IN FINANCE
1.00 to 4.00 Credit(s)
An in-depth exploration of a subject of special interest to both the student and the faculty member. Class hours by arrangement. Can be repeated as topic varies. Permission to enroll must be obtained in writing from the faculty mentor and the Dean of the College prior to registration. Restricted enrollment. Prerequisites: Junior standing and approval of faculty member.

Subject - Management (MGMT)

240 - MANAGEMENT INFORMATION SYSTEMS
4.00 Credit(s)
The development, design and implementation of management information systems with introduction to the terminology, concepts and trends in computer hardware and software. Prerequisite: ACCT 212.

291 - SPECIAL TOPICS IN MANAGEMENT
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.
325 - MANAGEMENT/LABOR LAW
4.00 Credit(s)
The legal relationship between employers and employees. Topics include the basic laws regulating labor relations, employment discrimination, workers’ compensation and disability payments, occupational safety and health, employment, and unemployment compensation, termination of employment, and retirement. Prerequisite: ABUS 312.

330 - PRINCIPLES OF MANAGEMENT
4.00 Credit(s)
Foundation to the study of modern management concepts. Emphasis on the major functions and activities performed by a manager. Historical theories, decision-making processes, interpersonal concepts and current management issues.

335 - MANAGEMENT ORGANIZATIONAL BEHAVIOR
4.00 Credit(s)
Human factors in organizations. Contributions of the behavioral sciences to the inner workings of business firms. Historical foundations, motivation, job satisfaction, bureaucratic structures, leadership and its development, group dynamics, social issues, communication, and organizational development and change. Prerequisite: MGMT 330.

363 - HUMAN RESOURCE MANAGEMENT
4.00 Credit(s)
Analysis of the role of human resources in contemporary organizations. Functions performed by the human resource practitioner in the areas of recruitment, training and development, compensation, employee relations, health and safety, and employee separation. The impact of government regulations. Prerequisite: MGMT 330.

364 - PRODUCTION AND OPERATIONS MANAGEMENT
4.00 Credit(s)
Major issues and analytical problem solving techniques existing in the field of production and operations management. Topics include design of production systems, operation, coordination and control of production activity in the context of minimum cost attainment. Prerequisites: MATH 143; FINC 362; MGMT 330 and junior standing.

391 - BUSINESS COMMUNICATIONS
4.00 Credit(s)
Techniques of effective oral and written communication in various business situations. Topics include communicating in resumes, letters, reports, presentations, interviews, and other management communication formats. Prerequisite: ENGL 111.
400 - CURRENT LABOR RELATIONS
4.00 Credit(s)
Managerial and organizational aspects arising out of employer/union relations. The evolution of labor relations, current labor law, negotiation and administration of labor agreements, and labor relations in the public sector as well as in foreign countries. Open to seniors only. Prerequisite: MGMT 363.

410 - BUSINESS AND SOCIETY
4.00 Credit(s)
The complex and dynamic interrelationships between business and society: the social, cultural, legal, ethical, economic and technological issues, philosophies and points of view which influence business. Issues of corporate responsibility, individual rights and multi-national business. Prerequisite: MGMT 363.

425 - INTERNSHIP IN MANAGEMENT
1.00 to 16.00 Credit(s)
Field experience in management. Course graded S or U. Internship experiences can be repeated for a maximum of 16 credit hours. Credit earned can be used only as general elective hours. Internship credit can not be used to satisfy either management or business elective requirements. Consult advisor.

474 - SMALL BUSINESS MANAGEMENT
4.00 Credit(s)
The importance of small business, its current status, problems encountered and requirements for successful operations. Emphasis being given to problem solving techniques for small businesses. Prerequisites: ABUS 312, MGMT 330, MRKT 351, FINC 362 and MATH 143.

485 - BUSINESS POLICY AND STRATEGY
4.00 Credit(s)
Integrative capstone course designed to provide students with an awareness of the roles and responsibilities of managers as they formulate and implement direction for their organizations in an ever changing environment. Case study is emphasized. Prerequisites: Senior standing and ECON 203, ABUS 312, MGMT 330, MRKT 351 and FINC 362.

496 - INTERNATIONAL MANAGEMENT
4.00 Credit(s)
Changes and trends that have impacted on worldwide businesses as they have evolved in the past several decades. The probable effects of these changes on both domestic and international firms from a global perspective. Cumulative effect of the accelerating change to a truly global economy. Collective industry expansions across international boundaries during the regular course of their operations. Prerequisites: ECON 203, FINC 362, MGMT 363 and MRKT 351.

491 - SPECIAL TOPICS IN MANAGEMENT
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

498 - INDEPENDENT STUDY IN MANAGEMENT
1.00 to 4.00 Credit(s)
An in-depth exploration of a subject of special interest to both the student and the faculty member. Hours by arrangement. Can be repeated as topic varies. Restricted enrollment. Permission to enroll must be obtained in writing from the faculty mentor and the Dean of the College prior to registration. Prerequisite: Junior standing and approval of the instructor.

Subject - Marketing (MRKT)

351 - MARKETING
4.00 Credit(s)
Provides a foundation to the discipline. Topics include product design and planning, promotional activities, pricing strategy, aspects of physical distribution, retailing, market research and buyer behavior. Strategic marketing, planning and control, ethics and international marketing are also incorporated throughout the course.

370 - RETAILING
4.00 Credit(s)
Topics include retail store formats, trading area analysis, store location and design, inventory evaluation and management, pricing strategies, sales promotion, merchandise planning, procurement and selling functions. Prerequisite: MRKT 351.

371 - PERSONAL SELLING
4.00 Credit(s)
Aspects of the behavioral approach to selling in the context of the marketing concept. Selling techniques are discussed which will build long term customer relationships. Topics include: prospecting, ethics, qualifying, presenting, product demonstrations, handling objections, closing, and follow up techniques as well as international selling. Prerequisite: MRKT 351.
372 - ADVERTISING
4.00 Credit(s)
Advertising as an integral part of the marketing process. An overview of agency operation, media strategy, print and electronic media, and copy creation and concepts. Cases are used to illustrate how organizations develop advertising strategies. An advertising plan must be developed for an organization using the principles of the course. Prerequisite: MRKT 351.

373 - LOGISTICS
4.00 Credit(s)
Move-storage activities that are necessary to deliver products to the right place, at the desired time, in the appropriate condition and at the lowest cost. Warehousing, transportation, order processing, inventory and material handling are key topics. Emphasis is given to the development of decision skills which will provide the best minimum total cost service to the customer. Prerequisites: MGMT 330 and MRKT 351.

376 - INDUSTRIAL MARKETING
4.00 Credit(s)
The basic industrial marketing system as distinguished from consumer marketing. The demand for industrial goods and the nature of the consumer is analyzed in detail. Characteristics of manufacturer’s goods, channels of distribution, pricing, vendor and value analysis, industrial buying, industrial advertising and meeting product specifications. Prerequisite: MRKT 351.

420 - INTERNSHIP IN MARKETING
1.00 to 16.00 Credit(s)
Field experience in marketing. Course graded S or U. Internship experiences can be repeated for a maximum of 16 credit hours. Credit earned can be used only as general elective hours. Internship credit cannot be used to satisfy either marketing or business elective requirements. Consult advisor.

434 - MARKETING RESEARCH
4.00 Credit(s)
Research design, data collection methods, sampling techniques, tabulation, analysis and presentation of information concerning problems in marketing. Provides students with a working knowledge of the concepts and methods of marketing research. Prerequisite: MRKT 351.

452 - CONSUMER BEHAVIOR
4.00 Credit(s)
Determinants of behavior which influence the purchase of goods and services. Consumer characteristics, situation analysis and product attributes are key topics covered in this area of behavior. Emphasis is given to the survey of sociological, cultural psychological, economic and communication theories which can be used to create unique marketing mixes for specialized target markets. Prerequisite: MRKT 351.

453 - INTERNATIONAL MARKETING
4.00 Credit(s)
World markets, their respective consumers and environments, and the marketing management required to meet the demand of world markets in a dynamic and everchanging setting. Emphasis is placed on contrasting marketing in the United States with marketing in foreign countries. Cases are used to illustrate marketing problems faced by international marketers. A marketing plan is required for a product or service in a foreign country. Prerequisite: MRKT 351.

455 - ADVANCED MARKETING
4.00 Credit(s)
Integrative capstone course in marketing which brings together all of the functional areas of marketing and requires the student to develop marketing strategies and apply them to problem situations. A group case approach is used in the course. Open to seniors only. (Formerly MRKT 451) Prerequisites: MRKT 351, 370 and 434; MGMT 330; and FINC 362.

493 - SPECIAL TOPICS IN MARKETING
1.00 to 4.00 Credit(s)
Can be repeated as the topic varies.

496 - INDEPENDENT STUDY IN MARKETING
1.00 to 4.00 Credit(s)
An exploration in depth of a subject of special interest to both the student and the faculty member. Hours by arrangement. Can be repeated as the topic varies. Prerequisites: Junior standing and approval of the instructor. Restricted enrollment. Permission to enroll must be obtained in writing from the faculty-mentor and the Dean of the college prior to registration.
THE THOMAS JEFFERSON SMULL COLLEGE OF Engineering

Bruce E. Burton, Dean

Accreditation and Association

The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), the only official accrediting agency for engineering curricula, has accredited curricula in civil, electrical, and mechanical engineering. The College is a member of the American Society for Engineering Education and is recognized by the Ohio Board of Registration for Professional Engineers and Surveyors.

History and Tradition

In 1871 the first catalog of the University included a course in surveying. A department of Civil Engineering was organized in 1880 with its first graduate in 1882, Electrical Engineering in 1898, and Mechanical Engineering in 1904. Over 4,000 engineers have graduated from the Thomas Jefferson Smull College of Engineering. All programs continue to meet the highest standards of engineering excellence.

The tradition of the College is to treat each student as an individual, to keep class size at a minimum, and to maintain a close faculty-student relationship.

The following faculty chairs have been established to enhance the educational tradition of the college.

Herbert F. Alter Chair of Engineering Science established in 1983 by Mrs. Alter in memory of her late husband, class of 1911 in mechanical engineering. The 1993-94 recipient is Dr. Les Thede, professor of electrical engineering.

Engineering Alumni Chair established in 1983 by donations from engineering alumni and friends in celebration of the college's centennial year. The 1993-94 recipient of the chair is Dr. Jonathan Smalley, professor and chair of civil engineering.

Leroy H. Lytle Distinguished Chair of Mechanical Engineering established in 1983 from the estate of Leroy H. Lytle, 1923 graduate of ONU. The 1993-94 recipient of the chair is Dr. Francis O. Oruma, associate professor of mechanical engineering.

Departments

There are three departments in the College of Engineering: civil engineering, electrical engineering, and mechanical engineering.

Mission Statement

The basic mission of the college is to develop in students a genuine competence in an orderly way of analytical thinking so that the students learn individually to think and to solve problems. The college follows the mission of the University in developing the students as whole individuals who will be successful and creative in their professions as well as in their personal lives. All students are encouraged to attain academic excellence in the subject matter basic to engineering and to continue excellence in their chosen branch of the engineering profession.

Admission Standards

Early application is advisable. As early as the junior year of high school the student interested in engineering is encouraged to obtain advice on program of study from the dean of the college and to request appropriate information and application materials from the Office of Admissions, Ohio Northern University, Ada, OH 45810.

In addition to the general requirements for admission to the University stated in this catalog, high school graduates and non-graduates must have 16 acceptable units of work. Ten of these units are as follows: 4 units in English; 4 units in mathematics (2 units in algebra, 1 unit in geometry, and at least 0.5 units in trigonometry or its equivalent); and 2 units in science (1 unit in physics and preferably 1 unit in chemistry). The college recommends but does not require that applicants have two units of a foreign language.

Students who meet the admission standards of the University but are deficient in the mathe-
matics or physics requirements of the college will be required to make up their deficiency. The college recommends that prospective students make up their high school deficiencies before entering as freshmen. An additional summer quarter or even a fifth year may be necessary for those students who do not meet this requirement before they enter as freshmen.

Transfer students from other accredited universities or colleges may be admitted with advance standing if they have an honorable dismissal and are eligible to return to the universities or colleges they previously attended. Transfer students who conceal their previous college attendance will have their admission to the college revoked. The college will not accept from transfer students more than 150 quarter hours or their equivalent. Transfer work must be "C" or better; "C-" is not acceptable.

The dean admits special students who are non-degree candidates if, after a personal interview, it is determined that they are sufficiently prepared to pursue engineering courses successfully.

Degree Requirements
Bachelor of Science degree in civil, electrical, or mechanical engineering.

General Education Requirements
The following lists the prescribed general education courses required of all students.

**English**
Writing 110 and 111

**Humanities and Social Sciences**
One course selected from Religion 105, 107, 108, 109, or 110.

Two humanities courses, one of which must be 200-level or above, selected from Art 100, Music 100; Philosophy 100, 102, 237, 238; Theater 105, 291; History 110, 111, 214, or 215.

Three social science courses, one of which must be 200-level or above, selected from Psychology 100; Sociology 105; Political Science 105, 206, 207; Economics 202, or 203.

One additional course selected from any of the above course areas under humanities and social sciences.

**Mathematics and Science Requirements**
The following math courses are required of all engineering students: Calculus 163, 261, 262, 263; Linear Algebra 272; Differential Equations 361; and Statistics for Scientists and Engineers 380.

The following science courses are required of all engineering students: Physics 231, 232, 233, 234, 235, 236; Chemistry 162 and 163.

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**Bachelor of Science in Civil Engineering Curriculum**

**First Year**
- Calculus 1, 2, 3, (MATH 163, MATH 261-2) 13 hours
- Physics 1, 3 and Labs (PHYS 231-33-34-36) 10 hours
- Introduction to Engineering 1, 2 (GE 101-2) 6 hours
- Statics (GE 113) 4 hours
- Writing 1, 2 (ENGL 110-11) 8 hours
- General Education 8 hours
**TOTAL** 49 hours

**Second Year**
- Calculus 4 (MATH 263) 4 hours
- Linear Algebra (MATH 272) 4 hours
- Differential Equations (MATH 361) 5 hours
- Physics 2 and Lab (PHYS 232-35) 5 hours
- Chemistry (CHEM 162-3) 8 hours
- Dynamics (GE 214) 4 hours
- Circuits 1 (GE 201) 5 hours
- Strength of Materials (GE 223) 4 hours
- Engineering Material Science (GE 243) 4 hours
- Surveying (CE 203) 4 hours
- General Education 4 hours
**TOTAL** 51 hours

**Third Year**
- Numerical Methods (CE 313) 4 hours
- Environmental Science (CE 321) 4 hours
- Geotechnical Engineering (CE 333) 4 hours
- Structures 1, 2 (CE 341-2) 9 hours
- Reinforced Concrete Design (CE 343) 5 hours
- Transportation 1, 2 (CE 351-2) 8 hours
- Fluid Mechanics (CE 362) 4 hours
- Hydraulics (CE 363) 4 hours
- Statistics for Scientists and Engineers (MATH 380) 4 hours
- General Education 4 hours
**TOTAL** 50 hours

**Fourth Year**
- Project Management (CE 414) 4 hours
- CE Design (CE 415) 4 hours
- CE Seminar (CE 416) 1 hour
- Soil Mechanics (CE 434) 4 hours
- Foundations (CE 438) 4 hours
- Steel Design (CE 444) 4 hours
- Transportation 3 (CE 453) 4 hours
- Hydrology (CE 464) 4 hours
- Environmental Engineering 1 (CE 465) 5 hours
- CE Elective 4 hours
- Professional Ethics (PHIL 336) 4 hours
- General Education 8 hours
**TOTAL** 50 hours

Total hours required for graduation: 200
### Bachelor of Science in Electrical Engineering

**Curriculum**

**First Year**
- Calculus 1, 2, 3
  - (MATH 163, MATH 261-2) 13 hours
- Physics 1, 3 and Labs
  - (PHYS 231-33-34-36) 10 hours
- Introduction to Engineering 1, 2
  - (GE 101-2) 6 hours
- Statics (GE 113) 4 hours
- Writing 1, 2 (ENGL 110-11) 8 hours
- General Education 8 hours

**Second Year**
- Calculus 4 (MATH 263) 4 hours
- Linear Algebra (MATH 272) 4 hours
- Differential Equations (MATH 361) 5 hours
- Physics 2 and Lab (PHYS 232-35) 5 hours
- Chemistry (CHEM 162-3) 8 hours
- Dynamics (GE 214) 4 hours
- Circuits 1 (GE 201) 5 hours
- Circuits 2 (GE 202) 4 hours
- Signals and Systems 1 (EE 203) 4 hours
- Digital Electronics 1 (EE 213) 4 hours
- General Education 4 hours

**TOTAL** 51 hours

**Third Year**
- Signals and Systems 2 (EE 301) 4 hours
- Digital Electronics 2, 3, 4
  - (EE 311-12-13) 12 hours
- Analog Electronics 1, 2 (EE 321-2) 8 hours
- Filter Design (EE 323) 4 hours
- Electromagnetic Fields (EE 331) 4 hours
- Energy Conversion (EE 332) 4 hours
- Power Systems (EE 333) 4 hours
- General Education 8 hours

**TOTAL** 48 hours

**Fourth Year**
- Control Systems 1, 2 (EE 444-5) 8 hours
- Digital Signal Processing (EE 411) 4 hours
- Senior Design Seminar (EE 404) 1 hour
- Statistics for Scientists and Engineers
  - (MATH 380) 4 hours
- Communication Systems 1, 2
  - (EE 458-9) 8 hours
- Senior Electrical Design (EE 405) 4 hours
- Engineering Methods (EE 472) 4 hours
- Engineering Communications (EE 406) 4 hours
- EE Electives 6 hours
- General Education 8 hours

**TOTAL** 51 hours

Total hours required for graduation: 199

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### Bachelor of Science in Mechanical Engineering

**Curriculum**

**First Year**
- Calculus 1, 2, 3
  - (MATH 163, MATH 261-2) 13 hours
- Physics 1, 3 and Labs
  - (PHYS 231-33-34-36) 10 hours
- Introduction to Engineering 1, 2
  - (GE 101-2) 6 hours
- Statics (GE 113) 4 hours
- Writing 1, 2 (ENGL 110-11) 8 hours
- General Education 8 hours

**TOTAL** 49 hours

**Second Year**
- Calculus 4 (MATH 263) 4 hours
- Linear Algebra (MATH 272) 4 hours
- Differential Equations (MATH 361) 5 hours
- Physics 2 and Lab (PHYS 232-35) 5 hours
- Chemistry (CHEM 162-3) 8 hours
- Dynamics (GE 214) 4 hours
- Circuits 1 (GE 201) 5 hours
- Circuits 2 (GE 202) 4 hours
- Strength of Materials (GE 223) 4 hours
- Engineering Material Science (GE 243) 4 hours
- Computer Applications and Design
  - (ME 202) 4 hours

**TOTAL** 51 hours

**Third Year**
- Mechanical Design 1 (ME 313) 4 hours
- Vibration Analysis (ME 315) 4 hours
- Control Systems (ME 316) 5 hours
- Advanced Strength of Materials
  - (ME 321) 5 hours
- Manufacturing Processes (ME 341) 4 hours
- Mechanisms (ME 352) 5 hours
- Thermodynamics (ME 362) 4 hours
- Thermodynamics of Fluids (ME 363) 5 hours
- Numerical Methods (ME 371) 4 hours
- Engineering Analysis (ME 382) 4 hours
- Finite Element Analysis (ME 383) 4 hours
- Statistics for Scientists and Engineers
  - (MATH 380) 4 hours

**TOTAL** 52 hours

**Fourth Year**
- Capstone-Mechanical Design 1, 2, 3,
  - (ME 411-12-13) 4 hours
- Mechanical Design 2 (ME 414) 4 hours
- Fluid Mechanics (ME 464) 5 hours
- Heat Transfer 1, 2 (ME 467-8) 8 hours
- Technical Elective 4 hours
- General Education 20 hours

**TOTAL** 45 hours

Total hours required for graduation: 197
Graduation Requirements

A student qualifies for graduation by meeting specific course requirements as listed in the catalog year by year for the specific program at specific levels and by earning a minimum of 197 academic hours. In addition, a student must attain at least a 2.00 accumulative grade point average in all courses and at least a 2.00 accumulative grade point average in all engineering courses.

All degree candidates are required to spend their senior year in academic residence, taking at least 45 quarter hours of upper level engineering courses.

At commencement engineering students receive the bachelor of science degree in either civil, electrical, or mechanical engineering.

General Regulations

Each department in the college lists quarter by quarter the standard course load for a student. The normal maximum load is that which is listed by the department for that quarter at that level or 19 hours, whichever is largest. The dean, upon recommendation of the student’s advisor, may permit a student to enroll for extra hours. The normal requirement is an accumulative average of at least 3.00/4.00. Except where noted, credit hours earned in repeated courses can be counted only one time among the total hours required for graduation.

S/U Grade Option

Students in the College of Engineering are not permitted to register for courses on an S/U (satisfactory/unsatisfactory) option basis if the course is offered on a graded basis.

Classification of Students

For purposes of classification, the minimum requirements for sophomore standing are 50 quarter hours of completed academic work; for junior standing, 100 quarter hours; and for senior standing, 150 quarter hours.

Academic Standing

A student is in good academic standing when the accumulative grade point average is equal to or greater than 2.00. When the accumulative grade point average falls below 2.00, a student is placed on probation. Normally, one quarter is given to raise the accumulative average to 2.00 or above. The status of probation may occur for two successive quarters if conditions and evidence indicate that the student is improving academically. Students on probation cannot participate in competitive activities of individuals, teams, or other groups officially designated as representing the University.

A student who consistently attains a low accumulative average (below 2.00) is subject to suspension. Unless otherwise indicated, suspension is for a period of three regular academic quarters. Students who have been suspended must petition the academic dean for lifting of the suspension.

Registration as a Professional Engineer

Registration as a Professional Engineer by the state, necessary for professional practice, requires licensing examinations and four years of experience after completing the bachelor of science degree. The dean gives full information to students in their senior year. Students may also write the Secretary of the State Board of Registration for Professional Engineers and Surveyors, 77 South High Street, 16th Floor, Columbus, OH 43266-0314.

Engineering Graduates and Law School

Graduating seniors of the Thomas Jefferson Smull College of Engineering who wish to enter the Pettit College of Law at Ohio Northern University are admitted automatically if they (1) maintain an undergraduate grade point average of at least 3.2; (2) score at or above the 65th percentile on the LSAT; and (3) pass the character and fitness review by the Law School Admissions Committee.

Arts-Engineering Curricula

Superior students may qualify to pursue the arts-engineering program. Students are admitted to both the College of Arts and Sciences and the College of Engineering and may earn the appropriate bachelor’s degree from the College of Arts and Sciences and a bachelor of science degree in the appropriate branch of engineering from the College of Engineering. The attraction of the dual degree program is that a student is free to major in any arts and sciences area and in any branch of engineering.
Cooperative Education Program

Cooperative education is a plan of educational development designed to integrate classroom study with planned and supervised work experiences. Engineering co-op students normally are employed in semiprofessional capacities in research, development, manufacturing, and engineering departments of industrial companies, consulting firms, and in federal and state agencies. The program also includes the opportunity for the students to work for an international firm in an international environment. The co-op component is modified to include courses in the appropriate language and culture and a six-month overseas assignment during the junior year. The employment sessions begin in the summer following the sophomore year and are alternated with study sessions until the student has completed his/her junior academic year. This five-year program is optional and currently available for civil, electrical, and mechanical engineering students.

General Engineering

No sharp line of distinction is drawn in the fundamental education of civil, electrical, or mechanical engineers for the reason that the sciences basic to engineering — mathematics, physics, chemistry, and the engineering sciences — are essential in all branches of engineering. Since certain courses in engineering are considered to be fundamental and deal with the basics of the several fields, they are used by all three departments in at least the first two years of the curriculum. Courses under General Engineering are taught by the engineering faculty and are required of all engineering students in at least two of the three departments.

Interdisciplinary Programs

In addition to the regular degree programs in civil, electrical, and mechanical engineering, three interdisciplinary programs have been developed. They are an Option in Business Administration, a Minor in Computer Science, and an Option in Environmental Engineering. The first two programs work equally well with any of the three degree programs while the third complements the Civil and Mechanical Engineering programs.

This is accomplished by proper planning and judicious use of social science and technical electives. Further, it is accomplished without a sacrifice in the engineering content of the three degree programs. In order to avoid scheduling conflicts, it is essential that the student follow the program as designated. A copy of each of the interdisciplinary programs may be obtained from the respective departmental offices. Any student may select one of the programs as an adjunct to the engineering degree program with the approval of the appropriate chair and the dean. In order for the student to continue on the program the accumulative average must be at least 2.50. A minimum of 28 hours in the minor or option is required for graduation. The diploma does not indicate the minor or option; however, the transcript does show the appropriate program designation.

Courses required for the Business Administration Option are two courses in economics, two courses in accounting, one course in business law, and two business electives.

In the Computer Science Minor the courses required are Introduction to Programming, Intermediate Programming, Programming Environments, and four upper level electives approved by the math and computer science department.

The Environmental Option includes two courses in the biological sciences, two in chemistry and five engineering courses which focus on various aspects of the environment.
DEPARTMENT OF GENERAL ENGINEERING

Subject - General Engineering (GE)

101 - INTRODUCTION TO ENGINEERING 1
(1+4)
3.00 Credit(s)
Emphasis on the engineering profession. Includes computer skills, CAD, professionalism, ethics, applications of math and physics to engineering projects completed by students working in teams. Corequisites: MATH 160 or 163.

102 - INTRODUCTION TO ENGINEERING 2
(1+4)
3.00 Credit(s)

113 - STATICS (4+0)
4.00 Credit(s)
Fundamental principles of statics with vector methods. Emphasis on free body diagrams and equations of equilibrium. Topics include resultants of force systems, centroids, centers of gravity, moments of inertia, equilibrium, shear and moment diagrams, loads, trusses, and internal forces. Prerequisites: MATH 163, PHYS 231. (Formerly GE 311)

180 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
A study of selected topics of current interest in general engineering. Prerequisite: Permission of instructor.

190 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in general engineering. Prerequisite: Permission of instructor.

201 - CIRCUITS 1 (4+2)
5.00 Credit(s)

202 - CIRCUITS 2 (3+2)
4.00 Credit(s)

214 - DYNAMICS (4+0)
4.00 Credit(s)
Fundamental principles of mechanics with vector methods as applied to dynamics. Topics include: kinematics, absolute and relative motion, force, mass and acceleration, work and energy, and impulse and momentum. Prerequisites: MATH 262 and GE 113.

223 - STRENGTH OF MATERIALS (4+0)
4.00 Credit(s)
Elastic analysis of deformable bodies using concepts of stress and strain. Topics include members subjected to tension, compression, torsion, and flexural loading. Development and application of Mohr's circle, determinate and indeterminate beam deflection, column stability, dynamic loading, and energy methods. Material properties, pressure vessels, and composite beams. Prerequisite: GE 113. (Formerly GE 313)

230 - FORTRAN FOR ENGINEERS (2+0)
2.00 Credit(s)
Concentrated study of the FORTRAN 77 language. Engineering application programs designed in FORTRAN 77. Prerequisite: GE 130.

243 - ENGINEERING MATERIAL SCIENCE
(3+2)
4.00 Credit(s)
Fundamental chemical, physical and microstructural characteristics of materials and how these relate to their mechanical behavior. Evaluation of these properties for material selection. Metallurgical aspects including equilibrium diagrams. Includes laboratory experiments in Mechanics of Materials and Material Science. Prerequisite: CHEM 162.

250 - ORIENTATION FOR CO-OP STUDENTS
(1+0)
0.00 Credit(s)
An introduction to the co-op program. Includes an introduction to industry, the industrial work environment, resume writing, interviewing and job search techniques. Designed to prepare the sophomore engineering student for the industrial experience. Prerequisites: Sophomore standing with CUMGPA of 2.5 minimum. (Formerly GE 300)
280 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
A study of selected topics of current interest in general engineering. Prerequisite: Permission of instructor.

290 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in general engineering. Prerequisite: Permission of instructor.

350 - PROFESSIONAL PRACTICE
1.00 Credit(s)
Employment in a semi-professional capacity in a research, development, manufacturing, or engineering department of an industrial company, a consulting firm or a governmental agency. A student report on the assignment and an employer’s evaluation are required. Prerequisites: Junior standing and successful completion of GE 250.

404 - MECHANICS OF MATERIALS 2 (3+0)
3.00 Credit(s)
Beam deflection-determinate and indeterminate, column stability, dynamic loading, and energy methods. Prerequisites: MATH 361 and GE 313.

405 - MECHANICS OF MATERIALS 2 LABORATORY (0+2)
1.00 Credit(s)
Prerequisite: GE 313. Corequisite: GE 404.

DEPARTMENT OF CIVIL ENGINEERING

Professors Milks, Shah, Smalley (Chair); Associate Professor Ward; Visiting Associate Professor Swart; Adjunct Professor Brewer.

Civil engineering deals with the design, construction, operation, and impacts of man’s civil works. Consequently, the quality of its graduates is a major factor influencing the health, safety, and life quality enjoyed by the nation’s citizenry. The practice of civil engineering requires a broad background in the biological, chemical, geological, mathematical, and physical sciences; understanding of social value systems, human behavior, and our cultural heritage; and in-depth education in the traditional civil engineering discipline.

Department facilities include instruments and equipment in functional laboratories.

Laboratory work is offered in testing materials, concrete, soils, geology, fluid mechanics, environmental engineering, and hydraulics, as well as field work in surveying.

Students must demonstrate an ability in design. Civil Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative) in which the basic sciences, mathematics, and engineering sciences are applied to convert resources optimally to meet a stated objective. Among the fundamental elements of the process are the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. The design process will be demonstrated in several courses, particularly in the senior year.

Subject - Civil Engineering (CE) —

203 - SURVEYING (2+4)
4.00 Credit(s)
Fundamentals of plane surveying including use of level, transit and tape, traversing theory and practice, horizontal and vertical curves, and topographic mapping. Prerequisite: MATH 163. (Formerly CE 301)

313 - NUMERICAL METHODS (4+0)
4.00 Credit(s)
Principles of numerical methods used in solving civil engineering problems. Topics include finite differences, finite element, linear programming, and optimization. Prerequisite: MATH 361. (Formerly CE 411)

321 - ENVIRONMENTAL SCIENCE (4+0)
4.00 Credit(s)
Sources and characteristics of pollutants, their effects on the environment, humans, and animals. Emphasis placed on interdisciplinary approach to reduce and treat wastes. Prerequisite: Junior Standing.

323 - SOLID AND HAZARDOUS WASTE MANAGEMENT (4+0)
4.00 Credit(s)
Sources and characteristics of solid and hazardous wastes; collection, transportation, and disposal. Selection of disposal sites and design of disposal facilities. Prerequisite: CHEM 163 (Formerly CE-474, 475)
333 - GEOTECHNICAL ENGINEERING (3+2)
4.00 Credit(s)
Principles of geologic processes and properties of earth materials as pertinent to civil engineering. Terrain and site investigation techniques. Physical and structural geology and geomorphology to the extent to which they influence the location, design, construction, and maintenance of engineering works. Prerequisite: Junior Standing. (Formerly CE 453.)

341 - STRUCTURES 1 (4+2)
5.00 Credit(s)
Analysis of determinant beams, trusses and frames. Topics include deflections, displacements, principle of superposition, moving loads, influence lines, cables and arches. Prerequisites: GE 223, MATH 361. (Formerly CE 412)

342 - STRUCTURES 2 (4+0)
4.00 Credit(s)
Fundamentals of statically indeterminate structures using classical, approximate, and computer solutions. Prerequisite: CE 341. (Formerly CE 413)

343 - REINFORCED CONCRETE DESIGN (4+2)
5.00 Credit(s)
Strength design of beams, columns, slabs, and footings using reinforced concrete. Application of ACI code and specifications to design including serviceability. Laboratory on concrete testing. Prerequisite: CE 342. (Formerly CE 525, 526)

351 - TRANSPORTATION 1 (4+0)
4.00 Credit(s)
Principles of transportation systems; city and regional planning, land use, and urban development as pertinent to transportation planning. Topics to include transportation demand and supply; trip generation, distribution, route assignment, and modal choice. Prerequisite: Junior standing.

352 - TRANSPORTATION 2 (4+0)
4.00 Credit(s)
Principles of traffic engineering, capacity, and level of service. Emphasis on intersection analysis and design. Prerequisite: CE 351.

362 - FLUID MECHANICS (3+2)
4.00 Credit(s)
Principles of the mechanics of fluids. Topics to include engineering properties of fluids, fluid statics, fluid dynamics by momentum and energy principles, boundary layer theory, steady flow in pipes and compressible flow. Prerequisite: GE 214. (Formerly CE 422)

363 - HYDRAULICS (3+2)
4.00 Credit(s)
Hydraulic analysis of piping systems to include friction losses and minor losses. Topics include pump design, hydraulics of wells, water hammer, hydraulic structures, flow measurement, and dimensional analysis and similitude. Design of a water distribution system is included as a term project. Prerequisite: CE 362. (Formerly CE 423)

380 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
A study of selected topics of current interest in civil engineering. Prerequisite: Permission of instructor.

390 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in civil engineering. Prerequisite: Permission of instructor.

414 - PROJECT MANAGEMENT (3+3)
4.00 Credit(s)
Principles of organization, management, and control of civil engineering projects. Topics include present and emerging legal and technical issues, critical path methods, and engineering economics. Selection of a capstone design project. Prerequisite: Senior Standing.

415 - CIVIL ENGINEERING DESIGN PROJECT (4+0)
4.00 Credit(s)
Capstone design project, under the specific guidance of a civil engineering faculty member. Prerequisite: CE 414. (Formerly CE 512)

416 - CIVIL ENGINEERING SEMINAR (1+0)
1.00 Credit(s)
Oral presentation of project completed in CE 415. Class discussion and critique of project results. Current topics of general civil engineering interest. Prerequisite: CE 415.

425 - ENVIRONMENTAL ENGINEERING 1 (4+2)
5.00 Credit(s)
Physical, chemical, and biological processes in water and wastewater treatment systems related to land and air pollution. Prerequisite: CE 464. (Formerly CE 516)
426 - ENVIRONMENTAL ENGINEERING 2 (4+0)
4.00 Credit(s)
Advances in waste treatment, removal of specific constituents. Effects and overview of the available types of unit operations and processes. Prerequisite: CE 425. (Formerly CE 518)

434 - SOIL MECHANICS (3+2)
4.00 Credit(s)
Physical properties of soils as affecting design and construction, mechanics of soil masses, compaction, settlements, consolidation, and laboratory soil tests. Prerequisites: CE 333 and 362. (Formerly CE 531)

438 - FOUNDATIONS (4+0)
4.00 Credit(s)
Analysis of stress conditions imposed on the supporting soil by foundations. Design of foundations, retaining structures, and slopes. Prerequisite: CE 434. (Formerly CE 532)

444 - STEEL DESIGN (4+0)
4.00 Credit(s)
Design of beams, columns, composite beams, girders, and connections using structural steel. Loads and material properties. Application of AISC code and specifications to design. Prerequisite: CE 342. (Formerly CE 547, 548)

446 - STRUCTURAL DESIGN (4+0)
4.00 Credit(s)
Design of structural projects. Prerequisites: CE 343, 444.

456 - TRANSPORTATION 3 (4+0)
4.00 Credit(s)
Design of transportation facilities with particular emphasis on highway design and pavements. Prerequisites: CE 203, 352. (Formerly CE 435)

464 - HYDROLOGY (3+2)
4.00 Credit(s)
Topics include estimates of population, water usage and wastewater generation, the hydrologic cycle, precipitation and streamflow data measurement and analysis, runoff prediction, hydrographs, flood routing, open channel flow and sanitary sewer design. A design term project is required. Prerequisite: CE 363. (Formerly CE 514)

466 - GROUNDWATER (3+2)
4.00 Credit(s)
Topics include properties of confined and unconfined aquifers, steady and unsteady groundwater hydraulics, aquifer pumping tests and mathematical groundwater modeling. Prerequisite: CE 464.

480 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
A study of selected topics of current interest in civil engineering. Prerequisite: Permission of instructor.

490 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in civil engineering. Prerequisite: Permission of instructor.

DEPARTMENT OF ELECTRICAL ENGINEERING

Professors Carmean, Johansen, Thede; Associate Professors Grismore (Chair), Herr

Electrical engineers have long pioneered the fields of power, automatic control, communications, and computers. Without controlled electricity, industry as we know it today could not exist. The ever-expanding use of electrical means for measurement, control, and computation has resulted in the need for electrical engineers in a variety of diverse and rapidly expanding areas — research institutes, developmental laboratories, manufacturing facilities, government service, medical facilities, computing centers, utility companies, consulting firms, etc.

The electrical engineering curriculum coordinates scientific background with technical knowledge. This curriculum is designed to provide a background for students who intend to pursue employment in the above mentioned areas or to pursue specialized work in graduate school.

Classroom activities are supplemented by work in well-equipped laboratories. Problem solving and laboratory experience are emphasized.

Subject - Electrical Engineering (EE)

203 - SIGNALS AND SYSTEMS 1 (4+0)
4.00 Credit(s)
Linear time domain analysis techniques. Frequency domain analysis including Laplace transform and Fourier series. Prerequisites: MATH 361, GE 202.
213 - DIGITAL ELECTRONICS 1 (3+2)
4.00 Credit(s)
Combinational logic analysis and design. Definition and characterization of fundamental logic gates; Boolean algebra, Karnaugh maps, algorithmic minimization techniques. Characterization and synthesis with PLDs. Design projects. Integrated laboratory experimental activities. Prerequisite: GE 202.

301 - SIGNALS AND SYSTEMS 2 (4+0)
4.00 Credit(s)
Continuous frequency domain analysis using the Fourier transform. Analysis of multiple input/output systems using state variables. Discrete analysis using the Z-Transform. Prerequisite: EE 203.

311 - DIGITAL ELECTRONICS 2 (3+3)
4.00 Credit(s)

312 - DIGITAL ELECTRONICS 3 (3+3)
4.00 Credit(s)

313 - DIGITAL ELECTRONICS 4 (2+4)
4.00 Credit(s)
Digital system design using VHDL. Highly project oriented. Top down design methodology. Design projects carried out at behavioral and RTL levels of abstraction. Use of industry standard CAE tools. Prerequisite: EE 312.

321 - ANALOG ELECTRONICS 1 (3+3)
4.00 Credit(s)
The analysis and design of analog electronic circuits using semiconductor diodes, transistors and integrated circuits. Computer techniques will be combined with laboratory work for several projects during the quarter. Prerequisites: GE 202, EE 203.

322 - ANALOG ELECTRONICS 2 (3+3)
4.00 Credit(s)
A continuation of Analog Electronics 1 (EE 321). Prerequisite: EE 321.

323 - FILTER DESIGN (3+2)
4.00 Credit(s)
The analysis and design of electronic filters including Butterworth and Chebyshev lowpass, highpass, bandpass and band-reject examples. The filters will be designed using several computer applications and will be evaluated via computer and laboratory measurements. Prerequisites: EE 301, 322.

331 - ELECTROMAGNETIC FIELDS (4+0)
4.00 Credit(s)
Fundamentals of analysis and design in electromagnetism with engineering applications to machines and transmission lines. An axiomatic approach to static electric fields, static magnetic fields and time varying fields leading to Maxwell’s equations. Prerequisites: MATH 263, PHYS 233.

332 - ENERGY CONVERSION (3+3)
4.00 Credit(s)
Analysis and design of electrical energy conversion systems emphasizing electromechanical devices, system representation, system analysis and system design. Prerequisites: MATH 263, EE 331.

333 - POWER SYSTEMS (3+3)
4.00 Credit(s)
Continuation of EE 332 with emphasis on system techniques of load flow and fault studies. Prerequisite: EE 332.

380 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
Selected topics of current interest in electrical engineering. Prerequisite: Permission of instructor.

390 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in electrical engineering. Prerequisite: Permission of instructor.
404 - SENIOR DESIGN SEMINAR (1+0)
1.00 Credit(s)
Characteristics of engineering design projects. Topics include research, project planning, reliability, safety, economics, design methodology, and liability. Written and oral presentations of a formal project proposal describing work to be carried out during EE 405. Prerequisite: Senior Standing.

405 - SENIOR ELECTRICAL DESIGN (4+0)
4.00 Credit(s)
A comprehensive design project relevant to electrical engineering. Application of the engineering design principles studied in EE 404. Prerequisite: EE 404.

406 - ENGINEERING COMMUNICATION (4+0)
4.00 Credit(s)
The presentation of technical information in both written and oral formats. Students will use Senior Electrical Design projects of EE 405 as sources of material for presentations. Prerequisite: EE 405.

411 - DIGITAL SIGNAL PROCESSING (3+3)
4.00 Credit(s)
The analysis and design of discrete time systems including FIR and IIR digital filters. The discrete time systems will be evaluated using several computer applications as well as dedicated hardware systems. Prerequisite: EE 323.

416 - ADVANCED TOPICS IN DSP (2+3)
3.00 Credit(s)
The application of digital signal processing to speech and image data using a variety of computer tools and hardware systems. Projects requiring the design of processing systems for speech and/or image data will be required. Prerequisite: EE 411.

423 - ELECTRONIC MATERIALS AND DEVICES (2+3)
3.00 Credit(s)
Properties of solid state materials as they relate to practical devices and device characteristics. Semiconductor, dielectric and magnetic properties and devices are studied.

433 - ADVANCED TOPICS IN ENERGY CONVERSION (3+0)
3.00 Credit(s)
Analysis and design of commercial and industrial power systems.

444 - CONTROL SYSTEMS 1 (3+3)
4.00 Credit(s)

445 - CONTROL SYSTEMS 2 (3+3)
4.00 Credit(s)

446 - ADVANCED TOPICS-CONTROL SYSTEMS (3+0)
3.00 Credit(s)
Selected advanced topics in Control Systems. Prerequisite: EE 445.

458 - COMMUNICATION SYSTEMS 1 (3+3)
4.00 Credit(s)
Analysis and design of Analog Communication Circuits. Prerequisites: EE 301, EE 322.

459 - COMMUNICATION SYSTEMS 2 (3+3)
4.00 Credit(s)

472 - ENGINEERING METHODS (4+0)
4.00 Credit(s)
Decision making based on criteria of economic factors including present worth, final worth, internal rate of return, cost benefit ratio, depreciation, taxes and others. Experiment design and decision making using statistical factorial methods. Analysis of engineering processes and procedures as they relate to quality management methods. Prerequisite: EE Senior Standing.

480 - SPECIAL TOPICS
1.00 to 4.00 Credit(s)
A study of selected topics of current interest in electrical engineering. Prerequisite: Permission of instructor.

490 - INDEPENDENT STUDY
1.00 to 4.00 Credit(s)
Individual study of topic of particular interest to the student in electrical engineering. Prerequisite: Permission of instructor.
DEPARTMENT OF MECHANICAL ENGINEERING

Professors Maier (Chair), Rider; Associate Professors Cowan, Oruma; Assistant Professors Laird, Marquart

Mechanical engineering is that branch of the profession of engineering which is concerned with the conversion of energy from one form to another, the design of machines, and the control of various processes. Mechanical engineers are involved in creative design, research, development, and management. They are being challenged today, as never before, to solve many critical problems related to productivity, mass transportation, and the supply of energy.

Every mechanical engineering student uses extensively the engineering laboratories along with the computer graphics, computer aided design and computer assisted machining laboratories. The laboratories are equipped to supplement all engineering courses. They also provide the opportunity for individual as well as group projects and limited undergraduate research.

Subject - Mechanical Engineering (ME)

202 - COMPUTER APPLICATIONS AND DESIGN (3+2)
4.00 Credit(s)
Introduction to the techniques involved in designing, implementing and testing computer programs and data acquisition systems. Computer programming in the FORTRAN language will be taught, as well as computer graphics fundamentals. An introduction to the instruments and software used in data acquisition, including pressure transducers, thermocouples, strain gages, etc. will be included. Prerequisite: GE 102.

315 - VIBRATION ANALYSIS (4+0)
4.00 Credit(s)
Fundamentals of linear vibration includes damped and undamped systems, single and multi-degree of freedom systems, and free or forced vibration. Prerequisites: MATH 361, GE 214 and ME 371.

316 - CONTROL SYSTEMS (4+2)
5.00 Credit(s)
Modeling, analysis and design of linear feedback control systems. Laplace transforms, transfer functions and frequency response. Introduction to digital controls and logic. Laboratory work in digital logic design, and performance studies of real systems. Prerequisites: ME 315, 371.

321 - ADVANCED STRENGTH OF MATERIALS (4+2)
5.00 Credit(s)
Mechanics of materials such as composites, linear elastic fracture mechanics, behavior of plastic materials, and initially-curved beams. Prerequisites: GE 214 and 223.

341 - MANUFACTURING PROCESSES (3+2)
4.00 Credit(s)
Contemporary material processing including molding, machining, hot and cold working. These processing methods using basic machining tools and operations, casting and molding equipment, and metal forming. Laboratory work includes operating basic process machines, CNC operation, process control exercises, and metrology. Prerequisite: GE 243.

352 - MECHANISMS (4+3)
5.00 Credit(s)
Kinematics and kinetics of mechanisms, analysis and synthesis of linkages, cams, gears, and robots. Prerequisites: MATH 272, GE 214 and ME 371.

362 - THERMODYNAMICS (4+0)
4.00 Credit(s)
363 - THERMODYNAMICS OF FLUIDS (4+2)
5.00 Credit(s)
Applications of the fundamentals of thermodynamics and the development of fluid mechanics principles. Investigation of heat pump, refrigeration and various power systems. The principles of static dynamic fluids will be developed, including buoyancy and incompressible, inviscid flow. Nonreacting and reacting gas mixtures and combustion will be addressed. Prerequisite: ME 362.

371 - NUMERICAL METHODS (4+0)
4.00 Credit(s)
Numerical methods applicable to problems arising in engineering practice; exact and approximate solutions investigated; finite methods used for linear and nonlinear equation solution; ordinary and partial differential equations treated. Fortran 77 programs designed and spreadsheets introduced. Prerequisites: MATH 361 and GE 230.

380 - SPECIAL TOPICS
1.00 to 5.00 Credit(s)
A study of selected topics of current interest in mechanical engineering. Prerequisite: Junior Status.

382 - ENGINEERING ANALYSIS (4+0)
4.00 Credit(s)
Professional method applied to the analysis of engineering problems. Emphasis placed on learning to deal with new situations in terms of fundamental principles. Economics. Prerequisites: MATH 361, GE 214, ME 371.

383 - FINITE ELEMENT ANALYSIS (3+2)
4.00 Credit(s)
The finite element method techniques are studied. These techniques are used to solve engineering continuum problems, both “by hand” and using the general purpose FEA package, ANSYS, on the DEC station computer. Types of problems solved include static and dynamic structural, as well as thermal systems. Prerequisites: GE 223 and ME 371.

390 - INDEPENDENT STUDY
1.00 to 5.00 Credit(s)
Individual study of topic of particular interest to the student in mechanical engineering.

409 - COMPUTER GRAPHICS (3+3)
4.00 Credit(s)
Practical studies involving the application of computer graphics in industry. Studies of hardware configurations and standard supportive software packages such as GKS and PHIGS. Prerequisite: ME 202.

411 - CAPSTONE-MECHANICAL DESIGN 1 (0+3)
1.00 Credit(s)
Initiation of capstone design project as a team effort. Corequisites: ME 414, 464 and 467.

412 - CAPSTONE-MECHANICAL DESIGN 2 (0+3)
1.00 Credit(s)
Continuation of capstone design project as a team effort. Prerequisite: ME 411.

413 - CAPSTONE-MECHANICAL DESIGN 3 (0+6)
2.00 Credit(s)
Completion of capstone design project as a team effort. Prerequisite: ME 412.

414 - MECHANICAL DESIGN 2 (4+0)
4.00 Credit(s)
Quality functional development, design for manufacturing and assembly, robust design, parameter and tolerance design, and failure mode and effect analysis. Corequisite: ME 411. Prerequisites: MATH 382 and ME 313.

442 - MANUFACTURING SYSTEMS (3+2)
4.00 Credit(s)
A study of the problems associated with manufacturing and solutions to some of these problems. Includes planning for system change and the application of computer integrated manufacturing. Prerequisite: ME 341.

462 - COMPUTATIONAL FLUID DYNAMICS (3+2)
4.00 Credit(s)
An introduction to the theory and methods of computational fluid dynamics, including grid generation, flow solution and postprocessing analysis. Implicit and explicit methods are studied, as well as direct and iterative solution techniques, and stability criteria. Students develop their own computer programs, as well as working with established computer codes. Prerequisites: ME 371 and 464.
464 - FLUID MECHANICS (3+2)
4.00 Credit(s)
Fundamentals of incompressible and compressible, viscous and inviscid flows. Application to external and internal flow configurations in the fields of fluid mechanics and aerodynamics. Introduction to computational fluid mechanics. Analysis and design of piping systems, pump design and selection. Concurrent laboratory experience with flow and property measurement, pumps and piping systems. Prerequisites: MATH 361 and ME 363.

467 - HEAT TRANSFER 1 (4+0)
4.00 Credit(s)
Heat conduction in steady and nonsteady state in one and two dimensions; thermal radiation concepts and heat exchange. Graphical, numerical and electrical analog methods of solutions. Prerequisites: MATH 361 and PHYS 232.

468 - HEAT TRANSFER 2 (3+2)
4.00 Credit(s)
Thermal radiation. Fundamentals of convection; empirical correlations; free and forced convection. Application to design. Laboratory reinforced study of conduction, convection, radiation and design. Prerequisite: ME 467.

469 - ENERGY SYSTEMS (3+2)
4.00 Credit(s)
Heat power systems utilizing concepts of thermodynamics, fluid mechanics and heat transfer. Examples such as solar energy and energy recuperation systems are studied along with optimization techniques. Laboratory involves energy related projects. Prerequisites: ME 363, 464 and 468.

480 - SPECIAL TOPICS
1.00 to 5.00 Credit(s)
A study of selected topics of current interest in mechanical engineering. Prerequisite: Junior or senior status.

489 - FE EXAM SEMINAR (1+0)
.00 Credit(s)
Review for the Ohio Fundamentals of Engineering Examination. This course does not count toward graduation hours. Prerequisites: GE 202, 214, 223 and 243; ME 315, 382, and 464.

490 - INDEPENDENT STUDY
1.00 to 5.00 Credit(s)
Individual study of a topic of a particular interest to a student in mechanical engineering. Prerequisite: Junior or senior status.
THE RUDOLPH H. RAABE COLLEGE OF Pharmacy

Thomas A. Gossel,  
Dean

The Raabe College of Pharmacy at Ohio Northern University endeavors today to meet the high standards of education demanded by the health professions. The college occupies a modern building designed and equipped to provide the facilities required for programs in the health sciences.

Throughout its 110-year history, the Ohio Northern University College of Pharmacy has played an important role in pharmaceutical education. Its position in Ohio is particularly significant. Over 6,200 pharmacists have been graduated by this institution and its graduates are particularly active in local, state, and national health-related organizations.

Pharmacy Alumni Endowed Chair established in 1984 through the generosity of pharmacy alumni and friends in celebration of the centennial of the college. The recipients of this chair include:

1988 Metta Lou Henderson, Ph.D., professor of pharmacy
1989 Thomas P. Faulkner, Ph.D., professor of pharmacology
1990 Thomas A. Gossel, Ph.D., professor of pharmacology
1991 Thomas G. Stewart, Ph.D., professor of medicinal chemistry
1992 Donald W. Stanislofski, Ph.D., professor of pharmacy
1993 Lewis K. Smith, Ph.D., professor of biochemistry

Departments
Department of Pharmacy Practice (PHPR)
Department of Pharmaceutical and Biomedical Sciences (PHBS)

Mission Statement

The mission of the College of Pharmacy is to prepare students to enter the practice of pharmacy so that they may contribute effectively to their profession. The college is responsible for generating and disseminating new knowledge about drugs and pharmaceutical care systems.

Context of statement: The college is responsible for educating well-rounded individuals with the ability to adapt to the changing profession. The educational process should include the scientific fundamentals necessary to adapt to future careers in the changing profession, the values necessary to serve society, development of problem-solving and communication skills and practice experience.

The faculty accept their role in teaching, conducting basic and applied research and providing service to the profession.

The mission of the college will be influenced by five areas over the next five to ten years: the role of pharmacy practice, the educational process, the faculty, the students, and finances.

Admission Standards

Persons seeking admission to the college must provide the necessary information and meet the general requirements for admission to the University as listed in that section of this catalog. Students who qualify under those standards are reviewed for final approval for admission by the dean of the college or his designate.

High School Graduates. It is recommended that high school graduates should have completed the college preparatory course including four years of English, four years of mathematics (algebra I and II, plane geometry, trigonometry or precalculus, or calculus) and three years of science including biology and

Accreditation and Affiliations

The Bachelor of Science in Pharmacy program is accredited by the American Council on Pharmaceutical Education and is recognized by the Board of Pharmacy of the State of Ohio as meeting the educational requirement for licensure examination. The College of Pharmacy is a member of the American Association of Colleges of Pharmacy, and the Council of Ohio Colleges of Pharmacy.
chemistry. Priority may be granted to students with additional credits. Students found to be deficient in these areas may be required to pursue remedial work prior to being scheduled in the regular course of study.

Transfer Students. A student desiring to transfer from another accredited college or university must present authenticated academic transcripts from all institutions attended. Credit will be allowed for any course in which a grade of C or better was received provided such work is parallel to the requirements for graduation from this institution (grades of C- are not transferable). Grades of P (passing) or S (satisfactory) are accepted when the academic institution certifies their equivalence to a C or better. Approval for admission and advanced placement will be determined upon review of the student’s previous record. Students entitled to advanced standing may enter at the time approved by the dean of the College of Pharmacy.

Bachelor of Science in Pharmacy Degree Requirements

The Bachelor of Science in Pharmacy degree is a five-year curriculum that provides a foundation in the basic sciences of pharmacy as well as a comprehensive understanding of health care settings. For the purpose of administration, the pharmacy program is divided into two major divisions: the Lower Division, consisting of the first two years (P-1 and P-2), and the Upper Division, consisting of the last three years (P-3, P-4, and P-5).

The program of study leading to the degree of Bachelor of Science in Pharmacy requires a minimum of 255 quarter hours of study, and is a combination of general education courses, basic sciences, professional pharmacy courses, and electives. The 255 quarter hours are divided according to the following:

General education courses 46-48 quarter hours
Basic science courses 53 quarter hours
Professional courses 131 quarter hours
Electives 23-25 quarter hours

General Education Requirements. The liberal studies component of the pharmacy degree curriculum consists of 46-48 quarter hours and intends to contribute significantly to the student's becoming an educated professional and a responsible citizen. These foundation courses provide the background for advanced education and are listed under the common discipline areas of communications competence, culture and society, aesthetic sensibility, and human values.

Communication Competence
Writing 110
Writing 111
Public Speaking 211 or
Interpersonal Communication 225

Culture and Society
Great Works of Literature 204
Western Civilization 110 or 111
Psychology 100
Sociology 105
Economics 100
One course in non-Western, Third World culture

Aesthetic Sensibility
Art 100 or Music 100 or Theatre 105

Human Values
Religions East and West 107
Ethics 238 or Ethics in Professional Practice 230

Basic Science Requirements. Basic sciences are needed in the pharmacy curriculum to provide not only the background required for professional pharmacy courses but also to contribute to developing a scientific literacy necessary to function in an increasingly complex and technical world. The required science courses are ordinarily completed in the Lower Division years.

Chemical Principles 171, 172, 173
Fundamentals of Organic Chemistry 221, 222, 223
General Biology 121
Introduction to Zoology 122
Introduction to Human Anatomy and Histology 124
Physiology 331, 332, 333
Introduction to Calculus 154
Introductory Data Analysis 156

Professional Pharmacy Requirements. Courses in pharmaceutical sciences, biomedical sciences, and pharmacy practice are designed to prepare students to meet the intellectual standards that are expected of the modern pharmacist, including the high ethical behavior that American society envisions.

Pharmaceutical and Biomedical Sciences
Pharmaceutics 321, 322, 323
Biochemistry 341, 342
Microbiology 361
Immunology 375
Medicinal Chemistry 376, 377
Introduction to Pathophysiology 390
Introduction to Pharmacology 391
Chemotherapy of Infectious Disease 421
Pharmacology 481, 482, 483
Toxicology 521
Pharmacy Practice
Prescription Compounding 344
Pharmaceutical Marketing 452
Advanced Pharmacokinetics 480
Therapeutics 481, 482
Pharmacy Practice 485, 486
Pharmacy Practice Laboratory 487
Pharmaceutical Law 551
Pharmaceutical Management 553
Health Care Systems 554
Introduction to Drug Information 563
Clinical Pharmacy 565
Structured Externship 580

Electives
Elective course hours for the pharmacy program may be selected from courses in Arts and Sciences, Business Administration, and the College of Pharmacy. Students may plan elective courses for personal enrichment or to satisfy a minor or a second major.

Bachelor of Science in Pharmacy Degree Curriculum

<table>
<thead>
<tr>
<th>First Year</th>
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<tbody>
<tr>
<td>Chemical Principles 171, 172, 173</td>
<td>15 hours</td>
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<tr>
<td>General Biology 121</td>
<td>4 hours</td>
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<tr>
<td>Introduction to Zoology 122</td>
<td>4 hours</td>
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<tr>
<td>Introduction to Human Anatomy and Histology 124</td>
<td>4 hours</td>
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<tr>
<td>Introduction to Calculus 154</td>
<td>4 hours</td>
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<tr>
<td>Introductory Data Analysis 156</td>
<td>4 hours</td>
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<tr>
<td>Pharmacy Orientation 101</td>
<td>0 hours</td>
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<tr>
<td>The Profession of Pharmacy 102, 103</td>
<td>2 hours</td>
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<tr>
<td>Writing 110, 111</td>
<td>8 hours</td>
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<tr>
<td>General Education</td>
<td>8 hours</td>
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<th>Second Year</th>
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<tr>
<td>Fundamentals of Organic Chemistry 221, 222, 223</td>
<td>9 hours</td>
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<tr>
<td>Physiology 331, 332, 333</td>
<td>9 hours</td>
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<tr>
<td>Public Speaking 211 or Interpersonal Communication 225</td>
<td>4 hours</td>
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<tr>
<td>Introduction to Pharmacy Practice 212</td>
<td>3 hours</td>
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<tr>
<td>Great Works of Literature 204</td>
<td>4 hours</td>
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<tr>
<td>Economics 100</td>
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<tr>
<td>General Education</td>
<td>20-22 hours</td>
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<th>Third Year</th>
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<tr>
<td>Pharmaceutics 321, 322, 323</td>
<td>12 hours</td>
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<tr>
<td>Prescription Compounding 344</td>
<td>2 hours</td>
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<tr>
<td>Biochemistry 341, 342</td>
<td>8 hours</td>
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<tr>
<td>Immunology 375</td>
<td>3 hours</td>
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<tr>
<td>Medicinal Chemistry 376</td>
<td>3 hours</td>
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<tr>
<td>Microbiology 361</td>
<td>4 hours</td>
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<td>Introduction to Pathophysiology 390</td>
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<td>Introduction to Pharmacology 391</td>
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<tr>
<td>Electives</td>
<td>9-11 hours</td>
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<td>TOTAL</td>
<td>47-49 hours</td>
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<tr>
<td>Pharmacy Practice 485, 486</td>
<td>7 hours</td>
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<tr>
<td>Pharmacy Practice Laboratory 487</td>
<td>1 hour</td>
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<tr>
<td>Pharmacology 481, 482, 483</td>
<td>11 hours</td>
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<tr>
<td>Chemotherapy of Infectious Disease 421</td>
<td>4 hours</td>
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<tr>
<td>Advanced Pharmacokinetics 480</td>
<td>2 hours</td>
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<tr>
<td>Therapeutics 481, 482</td>
<td>8 hours</td>
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<tr>
<td>Medicinal Chemistry 377</td>
<td>3 hours</td>
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<tr>
<td>Pharmaceutical Marketing 452</td>
<td>3 hours</td>
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<tr>
<td>Introduction to Drug Information 563</td>
<td>2 hours</td>
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<td>Toxicology 521</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Pharmaceutical Law 551</td>
<td>4 hours</td>
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<tr>
<td>Pharmaceutical Management 553</td>
<td>4 hours</td>
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<tr>
<td>Health Care Systems 554</td>
<td>4 hours</td>
</tr>
<tr>
<td>Clinical Pharmacy 565</td>
<td>16 hours</td>
</tr>
<tr>
<td>Structured Externship 580</td>
<td>16 hours</td>
</tr>
<tr>
<td>Electives</td>
<td>6 hours</td>
</tr>
<tr>
<td>TOTAL</td>
<td>50 hours</td>
</tr>
</tbody>
</table>

Doctor of Pharmacy Degree

The Doctor of Pharmacy degree being offered is an extended curriculum that provides for both basic and specialized competencies in the practice of pharmacy. A more detailed statement about this program is available through the Student Services Center of the College of Pharmacy.

Requirements for Graduation

Each candidate for a Bachelor of Science in Pharmacy degree:
1. Must be of good moral character.
2. Must have completed the required curriculum.
3. Must have earned a cumulative grade point average of 2.00 in all course work.
4. Must have a "C" or better in all required professional courses.
5. Must satisfy a minimum residency requirement.
as established by the dean of the college.
6. Must be recommended for the degree by a
majority vote of the faculty of the University.
7. Must meet such other qualifications as the
faculty of the college may determine.

General Administrative and
Academic Regulations

General administrative and academic
regulations for the College of Pharmacy are
established by the dean and faculty of the college
to assist students as they select courses and
attempt to fulfill graduation requirements. Additional
regulations may be developed during the academic
year or changes may be made to the following:
1. Students who wish to register for more than
19 hours of academic studies in a single quarter
need the written permission of the dean of the
College of Pharmacy.
2. Students registered for Clinical Pharmacy 565
or Structured Externship 580 may not register for
any additional required professional courses and
need the written permission of the dean of the
College of Pharmacy to register for additional
elective courses.
3. Students who wish to register for courses that
have conflicting time schedules need the written
permission of both the faculty members and the
dean of the College of Pharmacy.
4. Students are encouraged to register for
activity courses in art, music, theatre, and health
and physical education. There is no maximum
number of activity course credits that may be used
for fulfilling elective graduation requirements.
5. Students may repeat courses to improve their
understanding of the material or to improve their
grade, in which case only the last grade earned is
used in calculating their accumulative grade point
average.

S/U Grade Option

Students in the College of Pharmacy may
register for courses according to the Satisfactory/
Unsatisfactory policies of the college of course
registration. Only those courses that are ordinarily
graded only S/U may be used as credit toward
graduation. All courses must be taken within the
following guidelines.
1. Required general education courses may
not be graded S/U.
2. Required science courses may not be
graded S/U.
3. Except for those courses that are ordinarily
graded as S/U, students must declare for the
S/U option at the start of the quarter of registra-
tion, and may not change the grading option after
the second week of the quarter.

Classification of Students

Students enrolled in the Pharmacy program
are initially classified as P-1 students (unless
admission to advanced standing has been granted
to a student transferring from another accredited
college or university or a student has a degree in
another major). Students are advanced in standing
according to the following: P-2, upon completion of
50 quarter hours including Chemical Principles
171, 172, and 173; P-3 upon completion of 100
quarter hours including Fundamentals of Organic
Chemistry 221, 222, and 223; P-4 upon comple-
tion of 150 quarter hours including Pharmaceutics
321, 322, and 323; P-5 upon completion of 200
quarter hours including Pharmacy Practice 485,
486 and 487. In addition, all required courses in
the Lower Division must be completed before the
student is permitted to enter the second year of
the Upper Division (P-4 year). Other information
relative to the requirements for reclassification of
standing may be obtained in the Student Services
Center of the College of Pharmacy.

Academic Standing

A student who fails to maintain the prescribed
standards of scholarship will be subject to one of
the following actions, namely: 1) probation, 2)
continued probation, 3) suspension from the
college, or 4) dismissal from the college.

Following the first quarter that a student's
accumulative grade point average (GPA) falls
below 2.00, the student will be placed on probation. If
a student on probation fails to obtain good
academic standing (accumulative GPA 2.00 or
higher) after the following quarter, the student will
be placed on continued probation. If good
academic standing is not achieved by the end of
the following quarter the student may be suspended.

Any student with a quarterly GPA of less than 1.00
may be placed on probation or suspended. When a
student is on probation, the college may impose
special conditions for continued enrollment. Students
on probation cannot participate in competitive
activities of individuals, teams, or other groups
officially designated as representing the University.

When action is taken to suspend a student,
the suspension will be for a specified period of
time after which the student will be eligible to apply
for readmission. If readmission is granted, the
faculty will establish specific conditions of
academic performance expected of the student. A
quarterly GPA of less than 2.00 in any of the first
three quarters after readmission may lead to
dismissal. Dismissal is a terminal action and the
student is not eligible to apply for readmission to
the College of Pharmacy at any time thereafter.

PHARMACY 179
Dual Degree Programs

Superior students may elect to earn an additional degree from the College of Arts and Sciences or from the College of Business Administration concurrently with the Bachelor of Science degree in Pharmacy. The student following this option pursues both degrees simultaneously under the supervision of an advisor from the College of Pharmacy and an advisor selected from the other college. Tuition is charged at the College of Pharmacy rate and the student receives the appropriate degree in each college upon completion of all requirements.

A student taking the dual degree program must meet all of the requirements established for each degree. Certification of completion of these requirements is made by the college granting a degree.

Information relative to the procedure for declaring a dual degree program is available from the Student Services Center of the College of Pharmacy.

Pharmacy/Law Joint Degrees Program

The pharmacy/law joint degrees program is a seven-year curriculum that provides for substantial educational and research experience in pharmacy and law. The Bachelor of Science in Pharmacy degree is awarded following the summer term of the fifth year; the Juris Doctor at the end of two additional years of study. A more detailed statement about this program is available from the Student Services Center of the College of Pharmacy.

Student Services

The College of Pharmacy provides specialized services to students and alumni through the staff of the Student Services Center, including academic advising, peer tutoring, peer focus groups, personal counseling, career counseling, and job placement. The staff of the Center also coordinates professional organization functions, student group activities, and serves as the focus for special project planning and implementation. Prospective students are encouraged to contact the Center for further information in these areas.

Special Notice

Because of rapid developments in the health professions, the curriculum of the College of Pharmacy is constantly being reviewed by the faculty. The faculty of the college reserves the right, without advance notice, to change the content, duration and sequence of any course included in the curriculum, or to increase or decrease the number of credit hours leading to the degree.
311 - SPECIAL TOPICS IN DRUG ABUSE EDUCATION (1+0)
1.00 Credit(s)
Community service-oriented course involving presenting drug abuse education talks to various community groups, including middle school and high school students. The pharmacy student is provided the opportunity to further develop skills in conveying health information to the public, focusing on issues relating to drug abuse and chemical dependency. Can be repeated indefinitely. Corequisite: PHBS 310.

321 - PHARMACEUTICS 1 (3+3)
4.00 Credit(s)
The physical pharmacy, pharmaceutical, and biopharmaceutical aspects of a variety of drug delivery systems, predominantly solution dosage forms. The time-course of drug substances in various body compartments (pharmacokinetics) will be treated in a quantitative manner, and delivery system formulation factors which may affect drug pharmacokinetics (biopharmaceutics) will be discussed. (Formerly PHCA 321.) Prerequisites: CHEM 233; BIOL 333; MATH 156; and P-3 standing.

322 - PHARMACEUTICS 2 (3+3)
4.00 Credit(s)
The physical pharmacy, pharmaceutical and biopharmaceutical aspects of a variety of drug delivery systems, predominantly solid oral dosage forms. The time-course of drug substances in various body compartments (pharmacokinetics) will be treated in a quantitative manner, and delivery system formulation factors which may affect drug pharmacokinetics (biopharmaceutics) will be discussed. This course will also emphasize the concepts of bioavailability and bio- and generic equivalence of oral products. (Formerly PHCA 322.) Prerequisites: PHPR 212 and PHBS 321.

323 - PHARMACEUTICS 3 (3+3)
4.00 Credit(s)
The pharmaceutical, biopharmaceutical and pharmacokinetic aspects of suspensions, emulsions, aerosols and semisolids. Controlled release drug delivery systems as well as drug absorption from the skin, rectum, vagina, and lungs are discussed and treated in a quantitative manner. Novel and experimental delivery systems will also be examined as simple pharmacodynamic models. (Formerly PHCA 323.) Prerequisite: PHBS 322.
341 - BIOCHEMISTRY 1 (4+0)
4.00 Credit(s)
The chemistry of living organisms with emphasis on the human system. Topics include acid-base balance, buffers, chemistry of amino acids, proteins, enzymes, carbohydrates, lipids, vitamins, nucleic acids and porphyrins. Prerequisite: CHEM 233.

342 - BIOCHEMISTRY 2 (4+0)
4.00 Credit(s)
The major metabolic processes that are essential for human life, including biochemical energetics, the electron transport system, Kreb's cycle, the metabolism of carbohydrates, lipids and amino acids, and the biosynthesis of purines, pyrimidines, nucleic acids and proteins. Biochemical genetics and genetic disorders are also covered. Prerequisite: PHBS 341.

350 - BASIC NUTRITION (3+0)
3.00 Credit(s)
Basic principles of nutrition for pharmacy and nonpharmacy students. Topics include a description of essential nutrients, methods of evaluating individual dietary adequacy, and dietary methods for weight control.

351 - DIAGNOSTIC TESTS (3+0)
3.00 Credit(s)
The use of biochemical tests as agents for the diagnosis of human disease states. The theory, methodology, utility, significance, and reliability of such tests are discussed. Prerequisite: PHBS 342 or permission of instructor.

361 - MICROBIOLOGY (4+0)
4.00 Credit(s)
Emphasizes fundamentals of general microbiology and a general survey of techniques and principles pertaining to bacteria, yeasts, molds, viruses, and rickettsia. Microbial pathogens and a detailed consideration of the host-parasite relationship are emphasized. Prerequisite: One year of general biology or botany-zoology. Corequisite: PHBS 341.

375 - IMMUNOLOGY (3+0)
3.00 Credit(s)
Modern immunology and immunotherapy. It covers an understanding of the principles of basic and clinical immunology, historical background, host defense mechanisms, types of immune responses, nature of antigens and antibodies, antigen-antibody interactions leading to immunological disease, and transplantation and cancer immunology. Emphasis will be on the use of immunobiologica ls currently available in the USA for prevention and treatment of most common infections and immunologic diseases. The role of biotechnology as a source of immunobiologica ls will be discussed. Prerequisite: BIOL 333.

376 - MEDICINAL CHEMISTRY 1 (3+0)
3.00 Credit(s)
The first quarter of a two quarter sequence. Courses interface basic biological information with the basic chemical subjects in the setting of pharmaceutical products. Two main paths are taken: the effects of the chemical on the biological system (pharmacodynamics); the means by which the biological system manipulates the chemical and modifies it (pharmacokinetics). The organization is according to pharmacological activity or therapeutic application as much as possible and by chemical type where necessary. Emphasis is placed on basic chemical and biological principles, recognition of pharmacophoric groups, structure activity relationships, and nomenclature of drugs. Prerequisites: CHEM 233 and PHBS 342.

377 - MEDICINAL CHEMISTRY 2 (3+0)
3.00 Credit(s)
The second quarter of a two quarter sequence. Two main paths are taken: the effects of the chemical on the biological system (pharmacodynamics); the means by which the biological system manipulates the chemical and modifies it (pharmacokinetics). The organization is according to pharmacological activity or therapeutic application as much as possible and by chemical type where necessary. Emphasis is placed on basic chemical and biological principles, recognition of pharmacophoric groups, structure activity relationships, and nomenclature of drugs. Prerequisite: PHBS 376.
381 - NATURAL PRODUCTS 1 (2+0)
2.00 Credit(s)
A discussion of important examples of medicinal constituents found in terrestrial and marine plant origin. Brief history and sources of selected major plant constituents, the chemical, biological properties and category of uses are presented. Prerequisites: One year of biology and one year of organic chemistry.

382 - NATURAL PRODUCTS 2 (2+0)
2.00 Credit(s)
A continuation of Natural Products I dealing specifically with a discussion of natural products found in both terrestrial and marine animals. Emphasis is on biomedicinals such as hormones and enzymes, and on the biotoxins elaborated from these animals. Prerequisite: PHBS 381.

390 - INTRODUCTION TO PATHOPHYSIOLOGY (3+0)
3.00 Credit(s)
Pathological and pathophysiological principles and concepts encountered in human disease. General pathology and special pathological physiology of respiratory, gastrointestinal (including liver, gallbladder and pancreas), musculoskeletal, dermatological, ophthalmological and otic disorders, are discussed. Diseases involving the cardiovascular system, central nervous system, and the endocrine system are deferred to the pathology and pharmacology sequences (PHBS 481, 482 and 483). Corequisite: BIOL 333. Prerequisite: PHBS 342.

391 - INTRODUCTION TO GENERAL AND AUTONOMIC PHARMACOLOGY (3+0)
3.00 Credit(s)
The principles and concepts of pharmacology include, but are not limited to, discussion of receptors, dose-response, pharmacodynamic and pharmacokinetic factors leading to variability of responses, and pharmacogenetics. Autonomic and autacoid pharmacology covers drugs affecting the autonomic nervous system. The pharmacodynamic and pharmacokinetic properties are related to the therapeutic basis of drug therapy and toxicological aspects of drug actions. Prerequisite: PHBS 342. Co-requisites: BIOL 333, PHBS 390, 323.

421 - CHEMOTHERAPY OF INFECTIOUS DISEASE (4+0)
4.00 Credit(s)
A study of the antibiotics and synthetic chemicals used in the prophylaxis and treatment of infectious diseases. A drug-oriented approach for selected diseases. Included are selective toxicity, dosage forms, choices in therapy, differential diagnosis, MIC, resistance, therapy of common infections, therapy of acid-fast infections, and parasitic disease treatment. Prerequisites: BIOL 333 and PHBS 361 and 377.

422 - CHEMOTHERAPY OF PARASITIC DISEASES (2+0)
2.00 Credit(s)
Intended to bridge the gap between the usual material covered in the course Chemotherapy of Infectious Disease and expanded information on the diseases, organisms and information sources, unique to parasitic diseases. Topics include protozoal diseases and helminthic diseases. The natural history and causative agents of the disease, distribution, public health significance, and chemotheraphy of the illness will be stressed. Emphasis is on endemic diseases.

441 - MEDICINAL PLANT PROPAGATION AND CULTIVATION (2+3)
3.00 Credit(s)
The economic, geographic, commercial, and biological aspects of plants as sources of drugs, spices and various natural chemical products. Common poisonous plants and potentially harmful toxic constituents of plant foodstuffs are discussed. Field trips and cultivation of medicinal plants. Students are required to research the literature, write, and present reports. Prerequisite: Permission of instructor.

462 - VIROLOGY (2+0)
2.00 Credit(s)
A comprehensive coverage of the virus-host relationship from the viewpoint of molecular biology. Model systems are discussed utilizing the bacteriophage. Prerequisites: PHBS 342 and 361; or permission of instructor.
481 - PATHOLOGY AND PHARMACOLOGY
OF THE CARDIOVASCULAR SYSTEM (4+0)
4.00 Credit(s)
An integrated approach to the study of cardiovas-
cular disease states and the therapeutic agents
used to treat them. An emphasis is placed on
understanding the basic pharmacodynamic and
pharmacokinetic properties which underlie the
therapeutic and toxicologic actions of the cardio-
vascular drugs. Antineoplastic drugs and their
therapeutic applications in the treatment of
cancer are also presented. Prerequisites: PHBS
390 and 391.

521 - TOXICOLOGY (3+0)
3.00 Credit(s)
Essential subjects in clinical toxicology. Classifi-
cation and mechanisms of drug and chemical
toxicity; environmental, industrial, and household
poisoning; emergency management of poison-
ing. Major emphasis is on areas of clinical im-
portance. Prerequisite: PHBS 481, 482 and 483
or permission of instructor.

482 - PATHOLOGY AND PHARMACOLOGY
OF THE CENTRAL NERVOUS SYSTEM (4+0)
4.00 Credit(s)
Diseases of the central nervous system and the
pharmacology of the drugs used to treat them.
The pharmacodynamic and pharmacokinetic
properties of these drugs are related to therapeu-
tic and toxicologic aspects of the treatment of the
diseases. Prerequisites: PHBS 390 and 391.

530 - MANUFACTURING PHARMACY (1+6)
3.00 Credit(s)
The formulation and fabrication by mechanized
methods of a variety of pharmaceutical dosage
forms. Graded S/U. Prerequisite: Permission of
the instructor.

483 - PATHOLOGY AND PHARMACOLOGY
OF THE ENDOCRINE SYSTEM (3+0)
3.00 Credit(s)
An integrated approach to the study of endocrine
disorders, including the metabolic disease states
and rational use of pharmacologic agents used
to treat them. Emphasis is on understanding the
basic concepts and principles of
pharmacodynamic and pharmacokinetic prop-
ties which underly the therapeutic and toxicologic
actions of the drugs that affect endocrine and
neuroendocrine processes. Prerequisites: PHBS
390 and 391.

545 - DRUGS OF ABUSE (2+0)
2.00 Credit(s)
A more detailed look at some major issues
regarding drug abuse, with special emphasis on
the specific agents of abuse, their sources,
common distribution modes, patterns of sub-
stance abuse, pharmacological effects and
mechanisms, toxicologic concerns, treatment
modalities and approaches to drug abuse educa-
tion. Co-requisite: PHBS 482.

546 - INTRODUCTION TO GERIATRIC
PHARMACOLOGY (2+0)
2.00 Credit(s)
Principles dealing with age-related physical and
mental changes; pharmacokinetics, drug interac-
tions, disease states and drug therapy, misuse
and abuse of medication in the elderly. Prerequi-
site: Permission of instructor.

502 - PRINCIPLES AND PRACTICE OF
PUBLIC HEALTH (3+0)
3.00 Credit(s)
Individual and community aspects of public
hygiene, including infections, epidemiology,
prophylaxis, and discussion of major illnesses
(nutritional, mental, environmental and occupa-
tional). Prerequisite: PHBS 361.

511 - VETERINARY PHARMACY (2+0)
2.00 Credit(s)
The various pathological conditions peculiar to
animals and the pharmaceuticals used in the
treatment thereof. Prerequisite: Permission of
instructor.

562 - SURVEY OF RESEARCH AREAS IN THE
PHARMACEUTICAL SCIENCES 1 (1+0)
1.00 Credit(s)
Students are introduced to research areas in the
pharmaceutical, biomedical and pharmacy ad-
ministration areas, and opportunities in these
areas are defined. This course is team taught by
pharmacy faculty and designed for Pharmacy
and Arts and Sciences students interested in
research careers. Graded S/U. Prerequisites: P-
2 or sophomore standing.

563 - SURVEY OF RESEARCH AREAS IN THE
PHARMACEUTICAL SCIENCES 2 (1+0)
1.00 Credit(s)
Continuation of PHBS 562 with emphasis on the
particular research interests of the faculty and
presentations by outside speakers from academia, government, and industry. Graded
S/U. Prerequisites: P-2 or sophomore standing.
564 - SURVEY OF RESEARCH AREAS IN THE PHARMACEUTICAL SCIENCES 3 (1+0)
1.00 Credit(s)
Continuation of PHBS 563 with emphasis on the particular research interests of the faculty and presentations by outside speakers from academia, government and industry. Graded S/U. Prerequisite: P-2 or sophomore standing.

565 - RESEARCH IN THE PHARMACEUTICAL AND BIOMEDICAL SCIENCES (0+2)
2.00 Credit(s)
For students who intend to pursue graduate study in pharmacology, toxicology or related biomedical areas. Participation in all aspects of the design, implementation, model preparation, instrumentation, and reporting of specific research problems. Can be repeated for a maximum of 12 hours.

571 - SEMINAR IN PSYCHOPHARMACOLOGY (2+0)
2.00 Credit(s)
Student presentations of papers and discussions of topics of interest. Current papers in mental illness. Psychedelic drug effects and pharmacological research are discussed. Prerequisites: PHBS 482 and P-5 standing.

572 - SEMINAR IN TOXICOLOGY (2+0)
2.00 Credit(s)
Student presentation of papers and discussion of topics. Current events and relevant topics in clinical, occupational, industrial, and environmental toxicology are discussed. Prerequisites: PHBS 481, 482 and 483 and P-5 standing. Co-requisite: PHBS 521.

573 - SEMINAR IN PEDIATRIC PHARMACOLOGY (2+0)
2.00 Credit(s)
Common pediatric medical disorders and their management with special reference to the pharmacologic basis of pediatric medicine. Prerequisite: Permission of instructor.

575 - SEMINAR IN PROBLEMS OF DRUG ABUSE (2+0)
2.00 Credit(s)
Adverse effects of illicit drugs, particularly the long-term consequences of drug abuse. The problems of drug abuse from pharmacologic and biomedical aspects are discussed. This course may be repeated an indefinite number of times. Prerequisites: PHBS 481, 482 and 483.

590 - SPECIAL TOPICS IN PHARMACEUTICAL AND BIOMEDICAL SCIENCES
1.00 to 3.00 Credit(s)
Can be repeated as the subject varies. Prerequisite: Permission of the instructor.

594 - SEMINAR IN PHARMACEUTICAL AND BIOMEDICAL SCIENCES
1.00 to 3.00 Credit(s)
Can be repeated as the subject varies. Prerequisite: Permission of the instructor.

597 - INDEPENDENT STUDY-PHARMACEUTICAL AND BIOMEDICAL SCIENCES
1.00 to 3.00 Credit(s)
Can be repeated as the subject varies. Prerequisite: Permission of department chairman and accumulative grade point average of 2.50.

DEPARTMENT OF PHARMACY PRACTICE

Professors Henderson (Interim Chair), Previte, Stansloski; Associate Professors Earle, Goldberg, Jones, K. Kier, Lucas (part-time), Reiselman, L. Savino, Shoemaker; Assistant Professor Stanovich; Assistant Clinical Professors Ballentine (part-time), Bonfiglio (part-time), Cubick (part-time), Gearhart (part-time), Gibbs (part-time), Halula (part-time), Hulisz (part-time), Letting (part-time), Mendenhall (part-time), Mosdell, Nesbit; Instructors T. Kier, J. Turner; Assistant Instructor M. Turner (part-time)

Subject - Pharmacy Practice (PHPR)

101 - PHARMACY ORIENTATION (1+0)
.00 Credit(s)
Operations and goals of the University and the College of Pharmacy. The student is also made aware of the various services and opportunities offered on campus.

102 - THE PROFESSION OF PHARMACY 1 (1+0)
1.00 Credit(s)
The profession of pharmacy; its development, its educational requirements, the role of the pharmacist and the challenges.
103 - THE PROFESSION OF PHARMACY 2
(1+0)
1.00 Credit(s)
Continuation of PHPR 102.

212 - INTRODUCTION TO PHARMACY PRACTICE (3+0)
3.00 Credit(s)
Practical principles of law as they pertain to pharmacy interns, third party payment practices, and patient profiles are also covered. A major emphasis is placed on mathematics as applied to pharmacy including the prescription including the prescription, Latin symbols, metrology, reducing and enlarging formulæ, dilution and concentration, isotonic solutions and electrolyte solutions.

230 - ETHICS IN PROFESSIONAL PRACTICE (2+0)
2.00 Credit(s)
Teaches through guided discussions that there are ethical problems in life and that there are better and worse ways of dealing with those problems.

344 - PRESCRIPTION COMPOUNDING (1+3)
2.00 Credit(s)
Basic pharmaceutical concepts and techniques necessary to prepare extemporaneous dosage forms. The chemical, physical, and biological properties of the ingredients used and their relationship to the final product will be discussed in order to facilitate preparation of elegant, stable, safe and effective products. Corequisite: PHBS 321. Prerequisite: PHPR 212.

421 - INTRODUCTION TO HOSPITAL PHARMACY (3+0)
3.00 Credit(s)
Material on the history and organization of hospitals and hospital pharmacy departments. Special emphasis is placed on the responsibilities and professional activities of pharmacists within the hospital environment. (Formerly CLIN 421) Prerequisite: P-3 standing or permission of the instructor.

422 - PHARMACY SERVICE TO NURSING HOMES (1+0)
1.00 Credit(s)
The pharmacists' opportunities and responsibilities in nursing home practice. Main emphasis on consulting and distribution functions which include selecting a drug distribution system, conducting a drug regimen review and establishing a drug utilization review system. The relationship of pharmacy to nursing home management, patients and personnel is also discussed. Prerequisite: P-4 standing.

431 - HISTORY OF PHARMACY (3+0)
3.00 Credit(s)
The educational, organizational and professional growth and development of pharmacy in the United States. Prerequisite: P-4 standing.

452 - PHARMACEUTICAL MARKETING (3+0)
3.00 Credit(s)
Facts, considerations, and principles which underlie the flow of drug products, and the availability or use of pharmaceutical and other professional services from production to consumption. Principal economic, legislative, and social forces affecting the health care industry are discussed, and resulting policies and procedures are appraised. (Formerly PHCA 552)

478 - OUTPATIENT PHARMACY SERVICE (0+3)
1.00 Credit(s)
Laboratory course that serves the needs of the Health Center through the operation of the Student Health Pharmacy. Specific components include: the dispensing of prescriptions, patient counseling and patient profile maintenance. For students with limited or no internship experience. Prerequisites: Valid Ohio intern license.

480 - CLINICAL PHARMACOKINETICS (2+0)
2.00 Credit(s)
Physiologic application of pharmacokinetic theory and therapeutic drug monitoring. (Formerly CLIN 480) Prerequisite: PHBS 323.

481 - THERAPEUTICS 1 (4+0)
4.00 Credit(s)
The process of therapeutic decision-making, taught on a problem-oriented record model. A variety of disease states is covered. (Formerly CLIN 481.) Co-requisites: PHBS 421, 482, 483. Prerequisites: PHPR 480 and PHBS 481.

482 - THERAPEUTICS 2 (4+0)
4.00 Credit(s)
This course continues the format of PHPR 481. Special emphasis is placed on current controversies in therapeutic problem solving. Prerequisites: PHPR 481, PHBS 421, 482, and 483.
485 - PHARMACY PRACTICE 1 (4+0)
4.00 Credit(s)
The contemporary practice of pharmacy. Topics include dispensing systems, patient counseling, drug interactions, patient profile systems and the basic principles, equipment and techniques involved in the preparation, manipulation and administration of parenteral products. (Formerly PHCA 461) Corequisites: PHPR 480 and PHBS 481. Prerequisites: PHPR 344 and PHBS 323.

486 - PHARMACY PRACTICE 2 (3+0)
3.00 Credit(s)
The appropriate use of nonprescription drugs, products and devices. (Formerly PHCA 462) Corequisite: PHPR 482. Prerequisites: PHBS 481, 482 and 483.

487 - PHARMACY PRACTICE LABORATORY (0+3)
1.00 Credit(s)
Experience in solving pharmaceutical problems, in both hospital and community sites. Emphasis will be placed on solution methods utilizing patient profiles, patient questioning and counseling, drug information sources and aiding the physician in therapeutic decisions. The student will also be given exercises in aseptic technique and filling of IV admixtures. (Formerly PHCA 463) Corequisites: PHPR 481 and PHBS 482 and 483. Prerequisites: PHPR 480 and 485 and PHBS 481.

488 - SEMINAR IN PARENTERAL THERAPY (2+0)
2.00 Credit(s)
Various aspects of parenteral therapy. Topics include dosage forms, characteristics, preparation, administration and complications of therapy. (Formerly PHCA 466) Prerequisite: PHPR 485 or permission of the instructor.

551 - PHARMACEUTICAL LAW (4+0)
4.00 Credit(s)
Professional ethics and the philosophy, requirements, administration, and enforcement of local, state and federal laws related to the practice of the profession of pharmacy.

553 - PHARMACEUTICAL MANAGEMENT (4+0)
4.00 Credit(s)
Management science as it applies to the practice of pharmacy as both a profession and a business. Included are the internal and external economic forces that influence day to day operations. Special emphasis on financial report analysis and decision making.

554 - HEALTH CARE SYSTEMS (4+0)
4.00 Credit(s)
The development of the health care system and its present status. Contemporary issues in health care will be examined from a systems viewpoint. Prerequisite: PHPR 487.

563 - INTRODUCTION TO DRUG INFORMATION (1+3)
2.00 Credit(s)
Retrieval and evaluation of drug literature, dissemination and communication of non-biased drug information and the organization and development of a drug information center. (Formerly CLIN 563.) Prerequisites: PHBS 390, 391, and 421. Corequisites: PHPR 481, 485; PHBS 481 and P-4 standing.

565 - CLINICAL PHARMACY (0+45)
16.00 Credit(s)
Contemporary clinical pharmacy. Taught in affiliated institutions. Students are asked to apply pharmaceutical principles to the study of drugs, diseases and patients. Transportation and housing are arranged by the student. (Formerly CLIN 560.) Prerequisites: PHPR 480, 481, 482, 486, 487, 563, PHBS 421, 481, 482 and 483; P-5 standing; a valid Ohio Intern license; updated immunizations as required by clinical teaching site and/or state and federal regulatory agencies and valid CPR certification.

580 - STRUCTURED EXTERNSHIP (0+45)
16.00 Credit(s)
Structured experiences in various health care centers. Provides the student with experience in the actual application of material learned in didactic subjects. Prerequisites: PHPR 486 and 487; PHBS 421; P-5 standing; and a valid Ohio Intern license.

590 - SPECIAL TOPICS IN PHARMACY PRACTICE
1.00 to 3.00 Credit(s)
Can be repeated as the topic varies. Prerequisite: Permission of the instructor.

594 - SEMINAR IN PHARMACY PRACTICE
1.00 to 3.00 Credit(s)
Can be repeated as the topic varies. Prerequisite: Permission of the instructor.

597 - INDEPENDENT STUDY-PHARMACY PRACTICE
1.00 to 16.00 Credit(s)
Can be repeated as the topic varies. Prerequisites: Permission of department chairman and 2.50 accumulative grade point average.
610 - SEMINAR IN CLINICAL PHARMACY 1
(1+0)
1.00 Credit(s)
The practice of contemporary pharmacy. Updated reviews on various areas of therapeutics, individual investigational agents and treatment modalities, or emerging new classes of drugs. Presentations will be made by students and invited speakers with emphasis on development of student skills in oral presentations. (Formerly CLIN 610.) Prerequisite: Admission to Pharm.D. program.

611 - SEMINAR IN CLINICAL PHARMACY 2
(1+0)
1.00 Credit(s)
Continuation of PHPR 610. (Formerly CLIN 611.) Prerequisite: Admission to Pharm.D. program.

612 - SEMINAR IN CLINICAL PHARMACY 3
(1+0)
1.00 Credit(s)
Continuation of PHPR 611. (Formerly CLIN 612.) Prerequisite: Admission to Pharm.D. program.

620 - ADVANCED PATHOPHYSIOLOGY AND THERAPEUTICS 1 (6+0)
6.00 Credit(s)
Physiology and pathophysiology of disease processes, covered in a standard medically-related systems approach, and in-depth treatment of available therapeutic modalities. Discussions further include: (a) findings of current literature and comparison to standard textbook material; (b) focus on problem solving/decision making based on case examples; (c) drug dosing including unique disease states or special patient circumstance as they affect dosing considerations; (d) treatments of choice including cost effectiveness and ethical considerations; and (e) introduction of investigational modes of therapy. (Formerly CLIN 620.) Prerequisites: PHPR 481 and 482; PHBS 481, 482, 483; and admission to Pharm.D. program.

621 - ADVANCED PATHOPHYSIOLOGY AND THERAPEUTICS 2 (6+0)
6.00 Credit(s)
Continuation of PHPR 620. (Formerly CLIN 621.) Prerequisite: PHPR 620.

622 - ADVANCED PATHOPHYSIOLOGY AND THERAPEUTICS 3 (6+0)
6.00 Credit(s)
Continuation of PHPR 621. (Formerly CLIN 622.) Prerequisite: PHPR 621.

630 - APPLIED BIOSTATISTICS IN PHARMACY (3+0)
3.00 Credit(s)
A review of basic statistical procedures and more advanced statistical methods used in the pharmacist and medical sciences. Application of statistical methods in the development of research design and in the evaluation of clinical studies. (Formerly CLIN 630.) Prerequisites: MATH 156 and admission to Pharm.D. program.

631 - ADVANCED CLINICAL PHARMA-COKINETICS
(5+0)
5.00 Credit(s)
Use of mathematical and computer modeling to explore the derivation of the principles learned in earlier courses. The specific pharmacokinetic parameters of a group of drugs is discussed by investigating pharmacokinetic research literature. The application of these concepts to dosing patients is emphasized throughout the course, and specific case studies are included. (Formerly CLIN 631.) Prerequisites: PHPR 480 and admission to Pharm.D. program.

632 - DRUG LITERATURE EVALUATION (3+0)
3.00 Credit(s)
Evaluation of drug information sources (including the primary scientific literature). Process used to make authoritative judgments based on information provided from principles of research methodology. Application of epidemiologic methods to the characteristics and events of drug use. Emphasis will be on student application of drug literature evaluation skills. (Formerly CLIN 632) Prerequisites: PHPR 563 and 630.

640 - INTRODUCTION TO CLINICAL CLERKSHIP (3+0)
3.00 Credit(s)
Preparation for Clerkship in Clinical Pharmacy. Experience in analytical and communication skills toward the achievement of specified objectives. Description of various clerkship settings and the type of experience the student may gain there. Various aspects of physical assessment will also be introduced. (Formerly CLIN 640) Prerequisite: Admission to Pharm.D. program.

650 - CLERKSHIP IN CLINICAL PHARMACY (0+40)
6.00 Credit(s)
Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings. This educational process will occur in both institutional and ambulatory settings, and will serve as practice in providing pharmaceutical care as well as a means of integrating facts and principles received from antecedent courses. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. (Formerly CLIN 650) Prerequisites: PHPR 610, 611, 620, 621, 622, 630, 631, 632 and 640. May be repeated for up to 66 credit hours.